

AEROWORKS

50cc EXTRA 260 ARF-QB (Quick Build)

ASSEMBLY MANUAL



AEROWORKS

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Thank you for choosing the Aeroworks 50cc EXTRA 260 ARF-QB. We put great effort into making this plane the best model you will ever build and fly. We have provided you with the highest quality kit and performance possible. We wish you great success in the assembly and flying of your new Aeroworks 50cc EXTRA 260 ARF-QB.

!WARNING!

An R/C aircraft is not a toy! If misused, it can cause serious bodily harm and property damage. Fly only in open areas, and AMA (Academy of Model Aeronautics) approved flying sites. Follow all manufacturer instructions included with your plane, radio, servo's, batteries and engine.

Aeroworks manufacturing guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. In no case shall Aeroworks liability exceed the original cost of the purchased kit. Further, Aeroworks reserves the right to change or modify this warranty without notice.

In that Aeroworks has no control over the final assembly or materials used for final assembly, No liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

We, as the kit manufacturer, have provided you with a top quality, thoroughly tested kit and instructions, but ultimately the quality and fly ability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

INTRODUCTION

Your new 50cc EXTRA 260 ARF-QB is a highly aerobatic airplane. It is capable of both precision and 3-D maneuvers. The aircraft builds easily, quickly, and precisely due to its state of the art CAD design, LASER cut technology, and high quality included hardware. We hope you enjoy building and flying your 50cc EXTRA 260 ARF-QB.

Great care has been taken in both the design and manufacturing of the 50cc EXTRA 260 ARF-QB to allow for the strongest and lightest construction possible. Only the highest quality materials from the covering, paint, wood and hardware have been used in the construction of this model.

The 50cc EXTRA 260 ARF-QB has been individually hand built, covered and painted by trained and experienced craftsmen with over 25 years of manufacturing experience. Using CAD design, laser cut technology and jig-built assures accuracy in all stages of production.

The 50cc EXTRA 260 ARF-QB is designed for gas engines in the 50cc category. The DA-50cc engine is shown in the assembly instructions. The aircraft was tested with the DA-50cc and has outstanding performance. The final choice of engine is left up to the builder. A computer radio is recommended to allow the pilot to take advantage of the full capabilities of this aerobatic aircraft.

IMPORTANT Please read through this manual carefully, before starting the assembly of your new 50cc EXTRA 260 ARF-QB. Inventory and inspect all parts and hardware for any imperfections or damage. Notify **Aeroworks immediately** if there are missing or damaged parts.

INTENDED USE

This plane should not be regarded as a toy. This is an aerobatic plane and is recommended for pilots who are beyond the trainer-stage and are comfortable with flying an aerobatic sport plane.

!READ! WARRANTY !READ!

It is important to notify Aeroworks of any damage or problems with the model within 30 days of receiving your airplane to be covered under warranty. If you wish to return this aircraft for any reason a 15% restock fee will be charged to the customer. In addition the customer is responsible for all return shipping cost and all prior shipping cost will not be refunded. Parts will be exchanged or replaced once the original item is returned at the owner's expense. If you have any problems, please contact Aeroworks.

Aeroworks cannot insure the skill of the modeler and can not influence the builder during the construction or use of this aircraft, and therefore, will not be accountable for any property damage, bodily injury or death caused by this aircraft.

Aeroworks cannot insure the skill of the modeler and can not influence the builder during the construction or use of this aircraft, and therefore,

The purchaser/operator accepts all responsibility of any and all structural or mechanical failures.

KIT CONTENTS



50cc Extra 260 ARF-QB **Materials List**

Basic Aircraft Parts

Fuselage with pre-installed vertical fin – covered,

Pre-installed and fuel-proofed firewall, pre drilled for tail wheel assembly.

- (4) 8-32 blind nuts installed for main landing gear
- (4) 4-40 blind nuts installed for the mounting the stab.
- (6) 4-40 blind nuts installed for the mounting of cowl.
- (1) Hatch cover for the landing gear installed by (2) T2.6 x 16mm PWA screws (2) flat washers.
- Canopy base—painted with (4) 4-40 blind nuts installed
- (1) Tinted Canopy—glued on the canopy base and painted, installed on the fuselage by (4) 4-40 x 14 mm hex style bolts

- (4) #6 bonded washers for the mounting of the Canopy

- (2) pull-pull exit tubes for rudder cable installed

- (1) Antenna Tube installed

- (1) engine box hatch cover, installed

Left Wing with Aileron – covered: pre drilled for control horn mounting

- (1) 8-32 blind nuts installed for the wing mounting.
- (2) locator pins installed, pre drilled for cotter pin
- (6) pin point hinges installed and glued
- (1) Aileron servo string installed

Right Wing with Aileron – covered: pre drilled for control horn mounting

- (1) 8-32 blind nuts installed for the wing mounting.
- (2) locator pins glued, pre drilled for cotter pin
- (6) pin point hinges installed and glued
- (1) Aileron servo string installed

Horizontal Stabilizer with elevator assembly with (8) pin point hinges (glued)---covered, pre-drilled for control horns.

Rudder with (5) pin point hinges (not glued) – covered, pre-drilled for control horns.

SUB ASSEMBLIES

#1:

- (1) Fiberglass Cowling—painted with (6) screws holes
- (6) 4-40 x 16mm hex style bolts for mounting cowling
- (6) 3mm split lock washers for mounting cowling
- (6) #6 bonded washers for mounting cowling.

#2:

- (1) 4mm 7075 Aluminum Main Landing Gear -- painted
- (2) 5mm AL Axle Bolts
- (2) M8 lock nuts
- (4) 5mm i.d. Wheel Collars with set-screws
- (2) 85mm Dia. Main Wheels (Lite Type)
- (4) 4-40 x 16mm hex style bolts for mounting wheel pants
- (4) 3mm flat washer for mounting wheel pants
- (4) 3mm split ring lock washer for mounting wheel pants
- (4) 8-32 x 20mm hex head bolts for mounting main landing gear
- (4) flat washers for mounting main landing gear
- (4) split ring lock washers for mounting main landing gear.

#3:

- (2) Wheel Pants—1 Left and 1 Right---Painted
- (4) 4-40 blind nuts installed on the wheel pants, 2 per side.

#4:

- (1) AL Tail Wheel Assembly – Medium

#5:

- (1) 32mm o.d. Anodized Aluminum Tube for wing
- (2) 12.5mm o.d. Anodized. Aluminum Tubes for stab one front and one rear.
- (2) 8-32x25mm Hex head bolts for wing mounting
- (2) #8 bonded washer for wing mounting
- (2) #8 flat washers for wing mounting
- (2) #8 split ring lock washer for wing mounting
- (4) Hair pin for wing security - attachment
- (4) 4-40x16mm Hex head bolts for stab mounting
- (4) 3mm flat washer and (4) 3mm split ring lock washer for stab mounting
- (4) #6 bonded washers for stab mounting

#6:

- (2) 4-40 3" two end threaded pushrod with nuts for ailerons
- (2) 4-40 4" two end threaded pushrod with nuts for elevators.
- (2) 4-40 x250mm Threaded pushrod - throttle and choke.
- (2) 4-40 solder coupler - throttle and choke
- (2) 4-40 metal clevis - throttle and choke
- (2) 4-40 ball links - throttle and choke

#7:

- (2) 1x1100mm plastic coated pull-pull steel cable.
- (4) 4-40 Metal R/C links with metal clevises and nuts
- (4) 3.5x5mm brass pull-pull swaging tubes
- (6) AL double control horns
- (24) T2.6x16mm Phillips head mounting screws (elevators, ailerons)
- (12) T2.6X12mm Phillips head mounting screws (rudder)

#8:

- (1) 750cc (25 oz) Gas Fuel Tank assembly
- (1) 450cc (15 oz) Smoke Tank assembly
- 4' large gas fuel line

#9:

- (2) Servo mounting plates (throttle and choke)
- (3) Engine mounting template (DA50, 3W50 and blank for universal mounting)
- (2) 1.6x102x610mm balsa sheet - pipe tunnel
- (1) Plywood canister - pipe support former
- (2) Balsa F3 former sheeting - canister (3 pcs/set)
- (4) 11 o.d. x 20mm silicon tube - canister/pipe
- (1) Plywood cover for tunnel entrance with AW logo
- (4) T2.6x10mm screws for tunnel cover mounting
- (1) 160x70x6mm foam for the Fuel tank.
- (2) 300x80x8mm foam for the receiver and battery
- (1) 610x20mm Velcro strap

#10:

- (24) 6mm aluminum engine stand offs.

#11

- (10) 4-40 ball links / ailerons - elevators - rudder
- (4) Brass spacers

#12

- (1) Covering - White (small patching or repair)
- (1) Covering - Red (small patching or repair)
- (1) Covering - Blue (small patching or repair)
- (1) Transparent covering - sealing hinge gaps
- (2) Transparent covering strip - sealing of wing and stab leading edges

#13

- (1) AW - Custom throw meter - measure control deflection

ITEMS NEEDED TO COMPLETE

Hardware:



- 50 CC Gas engine and ignition
- Pitts style muffer or header with canister muffer or tuned pipe
- Engine mounting bolts, lock nuts, and washers.
- 3 1/2" Spinner and propeller of choice
- 2 x aileron servos (min 180 in./oz. Torque, Digital, Metal geared)
- 1 x rudder servo (min 180 in./oz. Torque, Digital, Metal geared)
- 2 x elevator servos (min 180 in./oz. Torque, Digital, Metal geared)
- 1 x throttle servo (Fast / Reliable)
- 1 x choke servo (Fast / Reliable) **optional**
- Servo extensions 2 x 6," 3 x 12," 2 x 18" 2 x 36"
- 1 x 8 channel receiver (PCM recommended)
- 1 x receiver battery (min 6.0 volt / 1700ma)
- 1 x ignition battery (min 4.8 volt / 1700ma)
- 2 x switches with charge jacks

Tools:



- Allen wrenches US and Metric.
- Dremel cutting disc and sanding drum tool
- Electric drill and selection of bits
- Razor saw
- Flat head screwdriver
- Hobby heat gun
- Hobby iron and covering sock
- Masking tape
- Modeling knife
- Needle nose pliers or crimping tool
- Paper towels
- Pen, pencil or felt tipped marker
- Phillips screwdriver
- Rubbing alcohol
- Ruler and tape measure
- Scissors
- T pins
- Waxed paper
- Wire Cutters

Adhesives:



- 15-30 Minute epoxy
- Blue Loctite
- Epoxy mixing cups, mixing sticks, brushes
- CA kicker (optional)
- Thick, Thin and Medium CA
- Rubbing alcohol
- Wipes

WARNING
Some rubbing alcohols
may attack painted parts.



TIGHTENING AND RE-SHRINKING THE COVERING

1. Open your kit slowly and take care not to damage any parts of the kit. Remove all parts from their plastic protective covers for inspection. Before doing any assembly or installation of any decals it is very important to re-shrink or re-tighten the already applied covering. Due to the shipping process, heat and humidity changes from different climates, the covering may become loose and wrinkle in the sun. If you take the time to re-tighten the covering, you will be rewarded with a long lasting beautifully covered model.



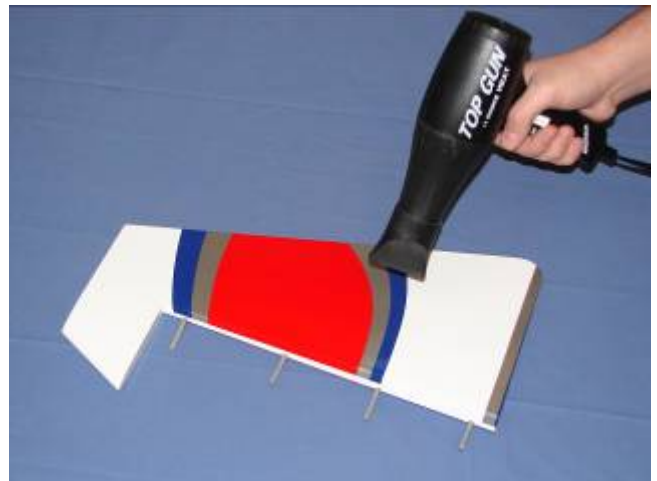
2. Using your covering iron with a soft sock, gently apply pressure and rub in the covering. If any bubbles occur, your iron may be too hot. Reduce heat and work slowly.



3. If bubbles persist, use a small pin to punch holes in the bubble to relieve trapped air and reheat.



4. Use your heat gun with extreme caution. Take care not to apply too much heat to one area for long periods of time. This may cause the trim colors to over shrink and pull away leaving unsightly gaps on the color lines. The trim stripes are especially vulnerable to over shrinking.



5. Your model is covered with Ultracote covering. In case of repairs, the colors are:

Midnight Blue	#885
Silver	#881
True Red	#866
White	#870

Tightening and re-shrinking the covering is a never ending process and needs to be checked after each flying session.

CHECKING SEAMS AND COLOR OVERLAPS FOR GOOD SEAL

1. Go over all seams and color overlaps with your sealing iron.

Note: Even if your models covering has no wrinkles out of the box it is still very important to go over all seams and overlaps to make certain they are sealed securely. This is especially important at the leading edges of the wings and stabs. We recommend checking the covering after each flying session.



2. Use your covering iron to ensure all edges, seams, and color overlaps are securely sealed.



3. This is an optional step but is recommended.

Cut strips of the supplied clear covering to fit the hinge gaps. Use covering iron to seal the clear covering snugly into the bottom of the hinge lines as shown for air tight hinge seals.



IMPORTANT:

It is the users responsibility to check the covering seams and overlaps for security and a good seal. Aeroworks is not responsible for failure of covering seams or overlaps during flight.

This is a never ending process that must be done after each flying secession. Due to varying temperatures and humidity changes from day to day the covering will continue to loosen and must be maintained.

Applying clear covering to the leading edge of wings and stabs.

1. In order to complete this step you will need:

Clear covering, Covering Iron, Scissors, Rubbing Alcohol, and Paper towel.



2. Clean the leading edge of each wing thoroughly with rubbing alcohol in order to insure a clean surface for the covering to stick to.

Note: Wing pictured in the following steps may be a different color and model. However, the procedure for applying the clear covering to your model will be the same.



3. Seal the top and bottom of the leading edge carefully to insure the covering is securely attached to the wood underneath.



4. Lay out one of the pieces of covering next to the leading edge of the wing in order to find the correct length for it to be cut to.



5. Cut the covering even with the wing tip being careful not to cut it to short.

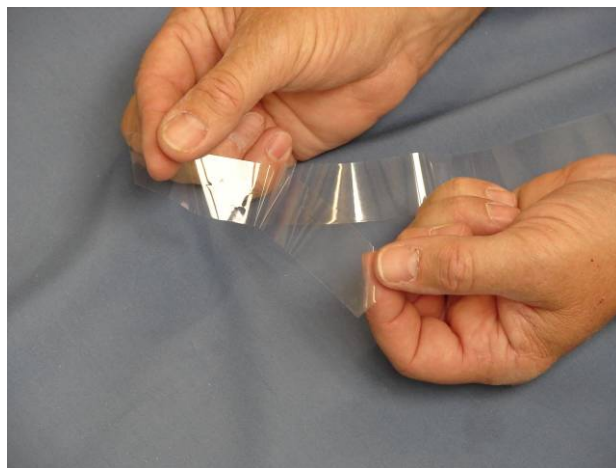


6. Save the excess covering from both wings in order to seal the leading edge of the horizontal stabs later.



7. Remove the clear backing from the covering.

Note: Do not skip this step. There is a backing to the covering. Take time to remove this backing to get the correct adhesion to the already applied covering.



8. Begin by tacking the covering in place at the wing root. Pay close attention to insure that the covering is centered top and bottom on the leading edge of the wing.



9. Using the same method as step 8 tack the covering to the tip of the wing once again keeping it centered on the leading edge.

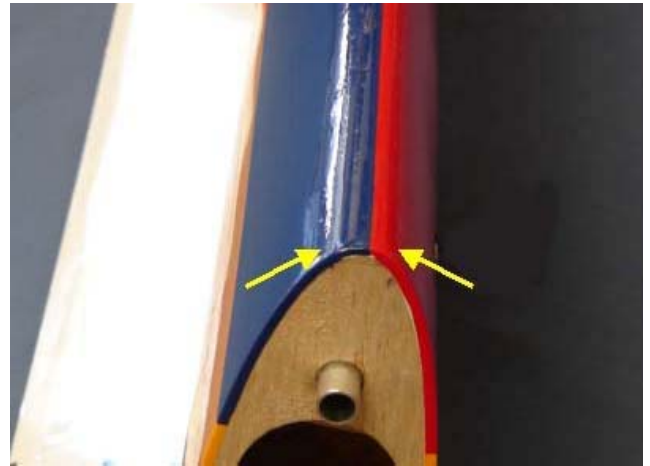


10. Once the covering has been tacked in place work from the center out to secure the covering to the leading edge of the wing.



11. Clear covering is now fully applied.

Note: Clear covering is centered on trim colors. Using the same method complete the remaining wing and stabs



IMPORTANT

It is the users responsibility to check the covering seams and overlaps for security and a good seal. Aeroworks is not responsible for failure of covering seams or overlaps during flight.

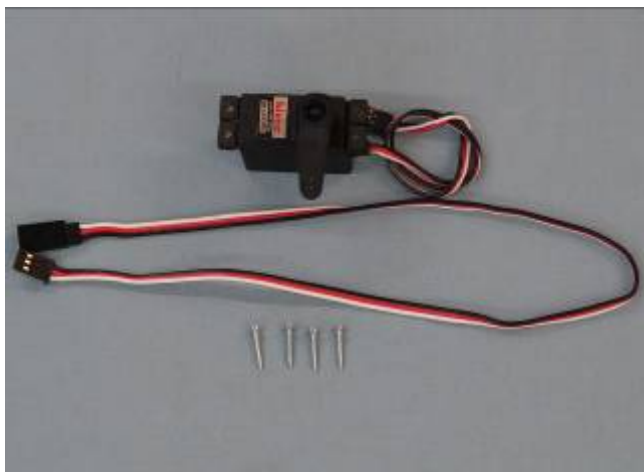
This is a never ending process that must be done after each flying secession. Due to varying temperatures and humidity changes from day to day the covering will continue to loosen and must be maintained.

WING ASSEMBLY

Aileron Servo Installation

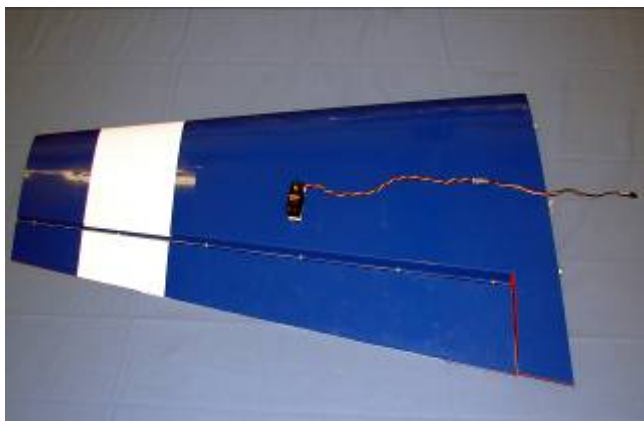
1. The ailerons have been pre-hinged and glued to the wing panels and are ready for flight. No other steps are necessary for hinging.

Note: We have supplied clear Ultracote for sealing the hinge gaps. This is an optional step but is recommended

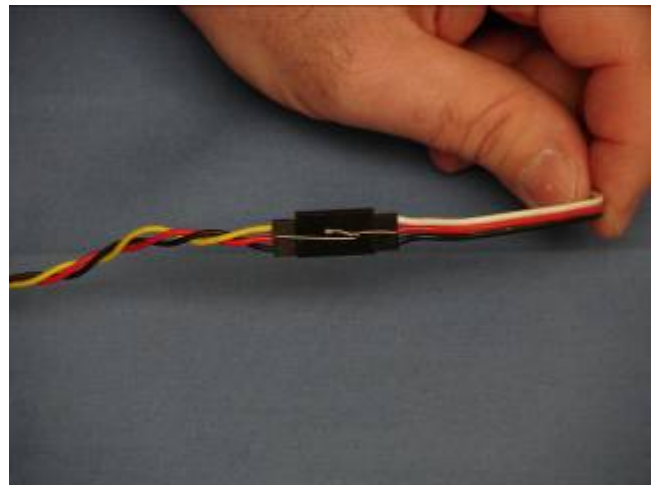


2. Layout the servo on the wing to test fit the installation and ensure servo lead is the correct length.

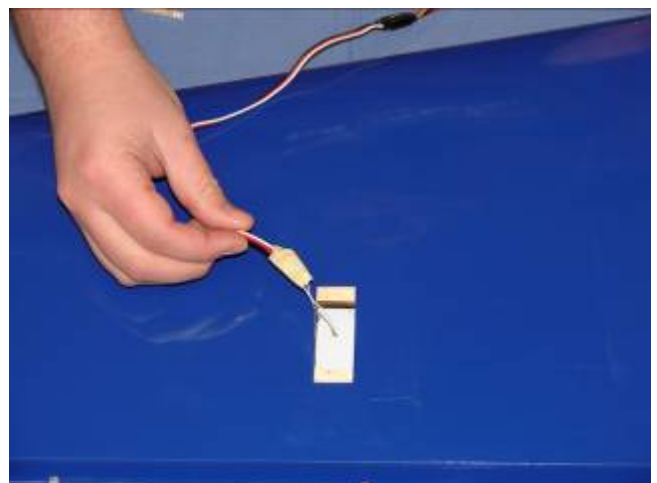
Note: 180 in. oz. digital, metal geared servos are recommended. Servo selection can be the difference between a great flying model and a model that will crash. Always use brand name high quality servos.



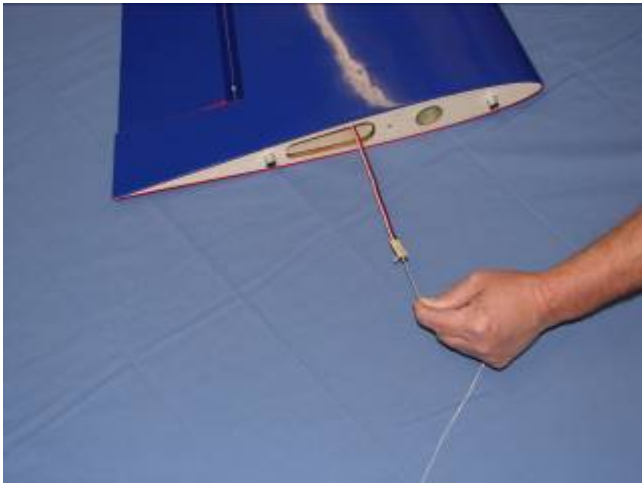
3. Attach the 18" extension to the servo lead and secure with safety wire, string, tape, or other method. Ensure the plugs will not come apart from vibration or light tension.



4. Fasten the pull string from the servo hole to the male plug of the servo extension. Secure with tape so that the strings pulls from the front end of the plug. Taper the tape to avoid hang-ups inside the wing.



5. Draw the 18" servo extension through the wing and pull through the wing root rib.



6. Install servo in servo well with the output arm toward the leading edge of the wing and mark locations of servo mounting holes.



7. Remove servo and use a 1/16 bit to drill servo mounting holes.



8. Install servo with servo mounting screws.



9. Aileron servo mounted in bottom of wing.



Aileron Control Linkage Installation

1. Gather the aileron control linkage parts as shown below. 1 pushrod, 2 ball link assemblies, 1 brass spacer, 1 left and 1 right side control horn, and 6 2.6 x 16mm wood screws for each wing panel.



2. Assemble the pushrod and control horn assembly as shown. The ball link goes between the left and right sides of the control horn sides and is secured with a nylon lock nut. Start with the center hole in the control horn. The ball link may be moved up or down for more or less control throw. Brass spacer goes between servo arm and ball link.



3. Place the control horns over the predrilled mounting holes.



4. Use a drop of thick CA glue on each screw as shown.



5. Securely fasten the control horn to the aileron with six wood screws as shown.



6. Tape the trailing edge of the aileron to the trailing edge of the wing in the neutral position. Plug the servo into the receiver and turn radio on. Ensure the servo trim and sub trim is centered. Adjust the length of the pushrod so that the servo arm is parallel to the aileron hinge line when it is placed on the servo output shaft. Screw servo arm on the servo output shaft.

Note: On metal geared servos use Loctite for all Servo arm mounting screws.



7. Ensure the servo does not bind at either end point at full deflection. A 1" servo arm is recommended for best results. A 1 1/4" servo arm is required for full deflection of the aileron 55° bevel.
8. Repeat all the above steps for the other wing.



STAB AND ELEVATOR ASSEMBLY

Elevator Servo Installation

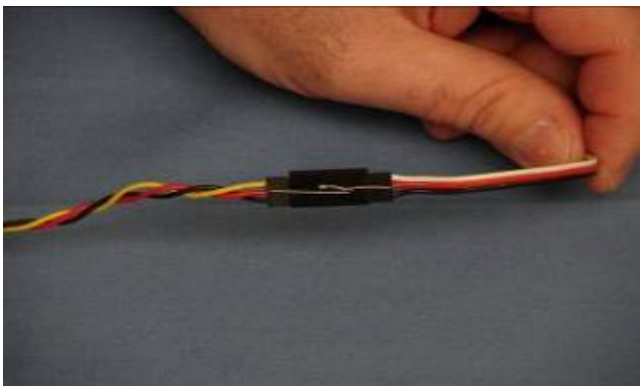
1. The elevators have been pre-hinged and glued to the stabs and are ready for flight. No other steps are necessary for hinging.

Note: We have supplied clear Ultracote for sealing the hinge gaps. This is an optional step but is recommended

Gather the stabs and elevators, two elevator servos, and two 36" servo extensions as shown below.



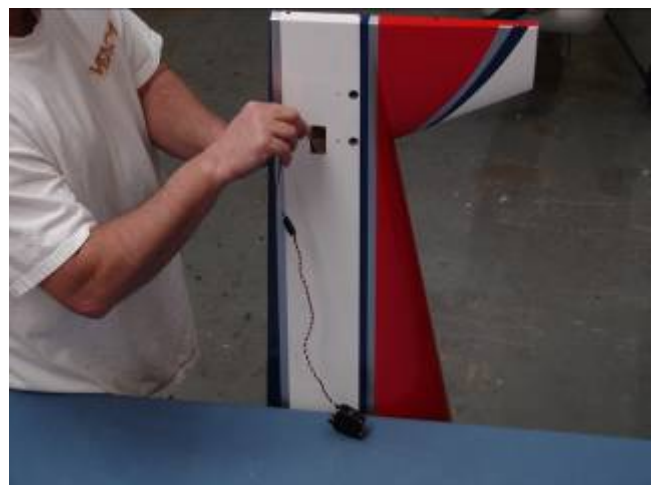
2. Attach the 36" extension to the servo lead and secure with safety wire, string, tape, or other method. Ensure the plugs will not come apart from vibration or light tension.
Note: 180 in. oz. digital, metal geared servos are recommended. Servo selection can be the difference between a great flying model and a model that will crash. Always use brand name high quality servos.



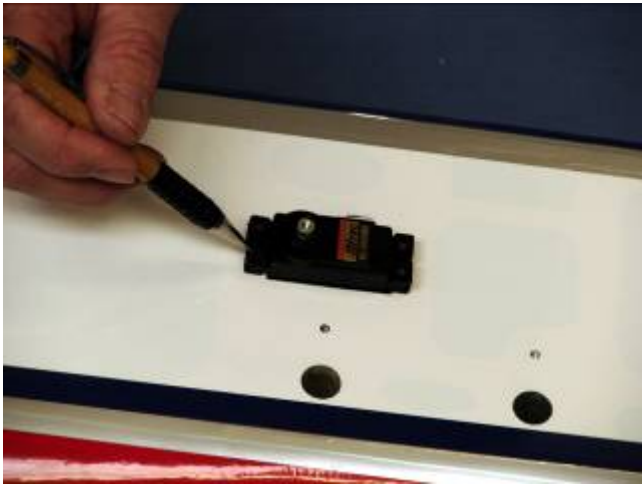
3. Layout the servo on the fuse to test fit the installation and ensure servo lead is the correct length.



4. Feed the servo extension through the elevator mounting hole into the fuse toward the nose as shown.



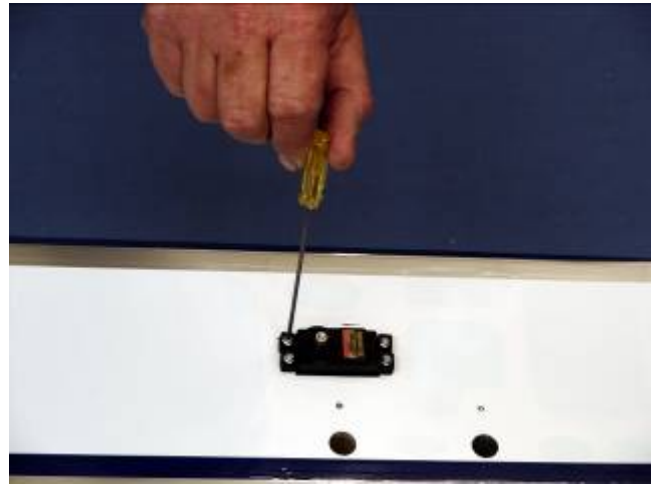
5. Install servo in servo cut out with the output shaft toward the nose and mark locations of servo mounting holes.



6. Remove servo and use a 1/16 bit to drill servo mounting holes.



7. Install servo with servo mounting screws.



Elevator Control Linkage Installation

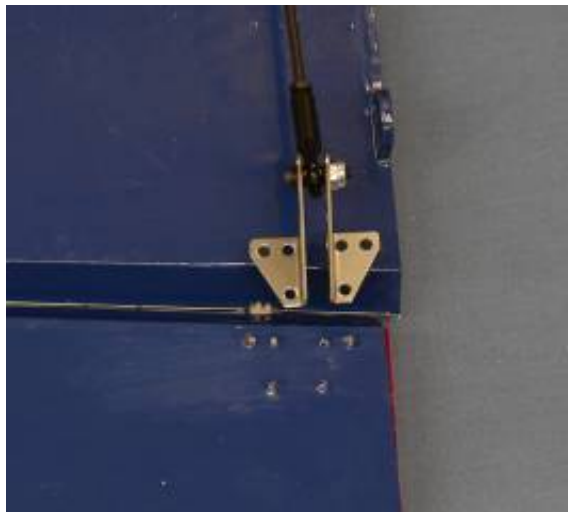
1. Gather the elevator control linkage parts as shown below. There are 2 pushrods, 4 ball link assemblies, 2 brass spacers, 2 left and 2 right side control horns, and 12 2.6 x 16mm wood screws for each stab and elevator.



2. Assemble two pushrod and control horn assemblies with servo output arms as shown. The ball link goes between the left and right sides of the control horn sides and is secured with a nylon lock nut. Start with the center hole in the control horn. The ball link may be moved up or down for more or less control throw. A 1 1/2" servo arm is recommended to achieve full deflection of the elevator bevel.



3. Brass spacer goes between servo arm and ball link
4. Place the control horn over the pre-drilled mounting holes as shown.



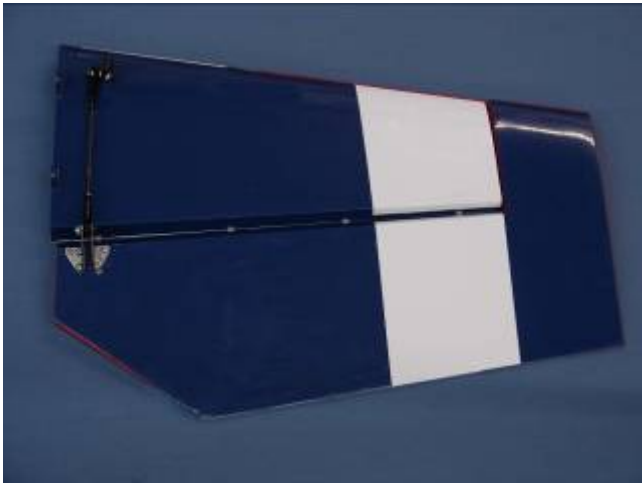
5. Use a drop of thick CA glue on each screw as shown.



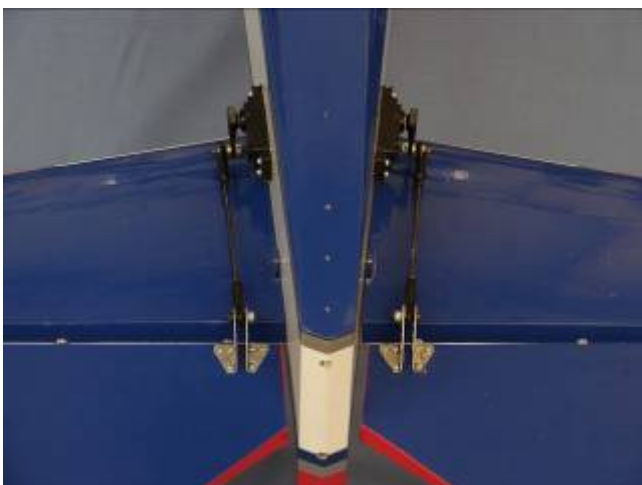
6. Mount the control horn using six wood screws as shown.



7. Tape leading edge of the elevator balance tab to the leading edge of the stab in the neutral position. Plug the elevator servo into the receiver and turn radio on. Ensure the servo trim is centered.



8. Attach the stab and elevator to the fuse and screw in place. Adjust the length of the elevator pushrod so that the servo arm is 90 degrees to the servo case when it is placed on the servo output shaft. Ensure the servo does not bind at either end point at full deflection.
9. Repeat the above steps for the other stab and elevator.



RUDDER AND TAILWHEEL ASSEMBLY

Rudder Installation

1. Gather the rudder, four hinges, rubbing alcohol, petroleum jelly and epoxy materials as shown. Use 15-30 minute epoxy to ensure adequate working and cleanup time.



2. Prep all hinges for installation by applying Vaseline petroleum jelly or light oil to the hinge joint. This ensures no epoxy gets into the hinge during assembly.



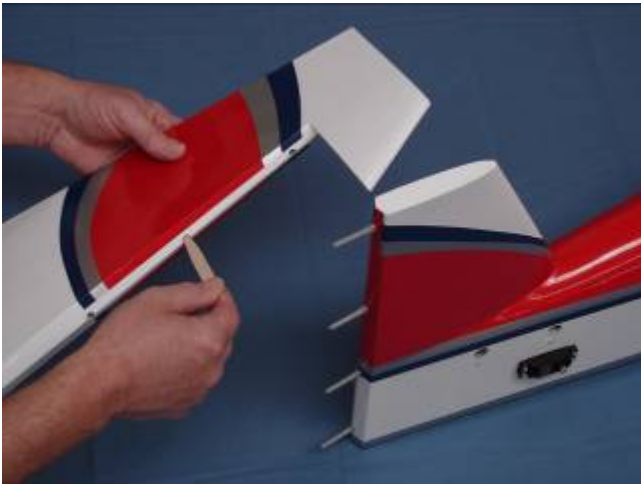
3. Mix epoxy in mixing cup and use a tapered stick to apply the epoxy inside the pre-drilled holes in the trailing edge of the fin. Apply epoxy to one side of each hinge and insert the hinge completely into the hole. Ensure the hinge axis is vertical and parallel to the trailing edge of the fin before epoxy cures. Wipe away excess epoxy with alcohol wetted wipes.



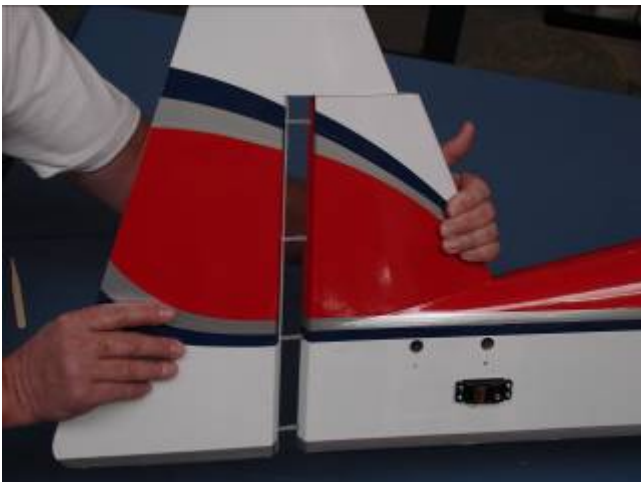
4. Epoxy the hinges into the fin first and allow epoxy to fully cure.



5. Mix epoxy in mixing cup and use a tapered stick to apply the epoxy inside the pre-drilled holes in the leading edge of the rudder. Apply epoxy to trailing edge of each hinge.



6. Carefully slide the rudder onto each hinge and against the trailing edge of the fin. Wipe away excess epoxy with alcohol wetted wipes.



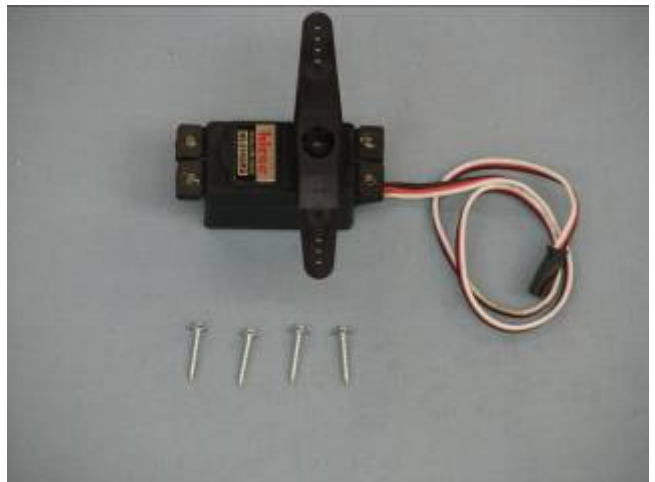
7. Ensure there is no gap between fin and rudder. Allow epoxy to fully cure.

Note: We have supplied clear Ultracote for sealing the hinge gaps. This is an optional step but is recommended



Rudder Servos Installation

1. Gather one rudder servo with double output arm as shown below. **Note:** 180 in. oz. digital, metal geared servo is recommended. Servo selection can be the difference between a great flying model and a model that will crash. Always use brand name high quality servos.



2. Install the rudder servo in the forward servo cut-out with the output shaft to the rear.

Your model may only have one rudder servo cut out. Only one rudder servo is required for full rudder performance.



3. Mark and use a 1/16 bit to drill the rudder servo mounting holes.



4. Install rudder servo with servo screws.



Rudder Pull-Pull Cable Installation

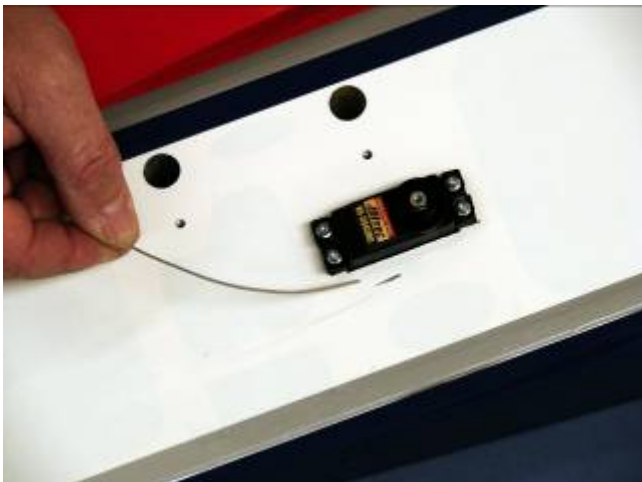
1. Gather the rudder control linkage parts shown below. Rudder cable, 2 ball link assemblies, 2 threaded metal RC links, 4 threaded couplers, 4 brass swaging tubes, 2 left and 2 right side control horns, and 12 2.6 x 12mm wood screws.



2. Gather the rudder control linkage parts shown below. 2 Rudder cables, 2 threaded metal RC links, 4 threaded couplers, and 4 brass swaging tubes.



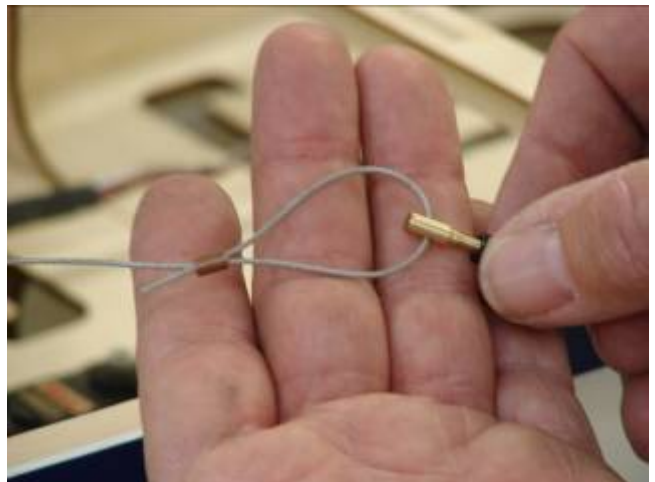
3. Feed one rudder cable through the pre installed cable exit tube in the rear of the fuse toward the front of the fuse. Repeat for other side.



4. Pull the rudder cables from rear of fuse to the rudder servo tray.



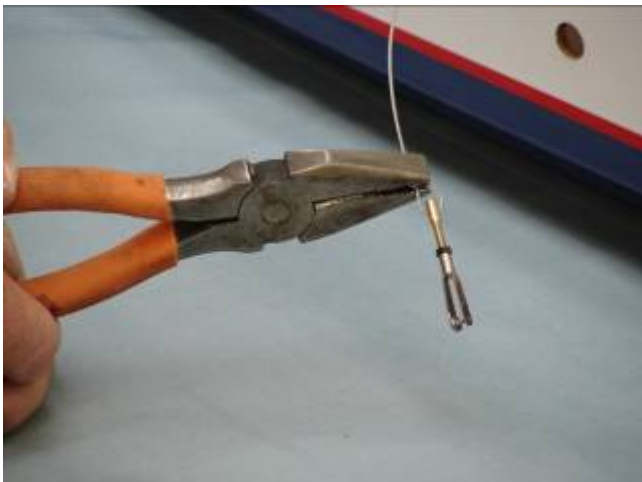
5. Insert rudder cable through the brass swage tube, then through the threaded coupler hole, and back through the brass swage tube as shown.



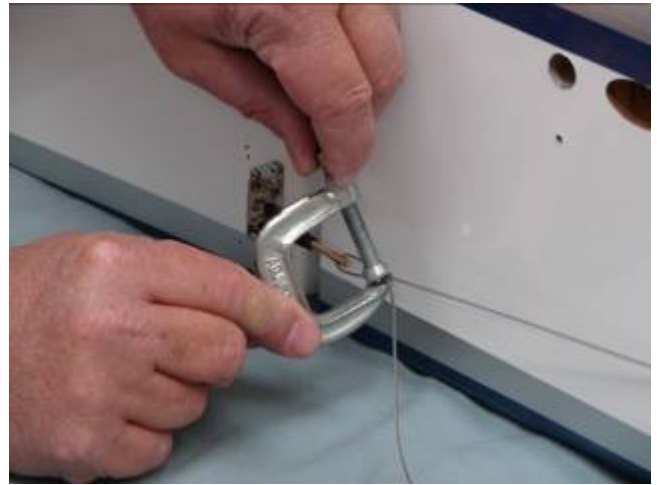
6. Loop the cable back through the brass swage tube as shown.



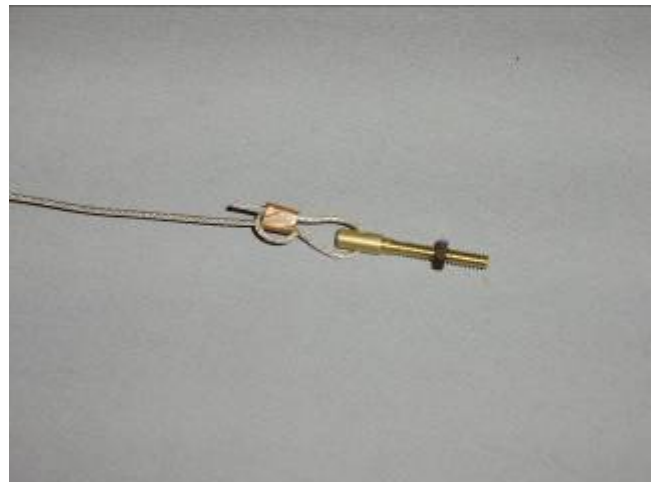
7. Tighten the second loop through the brass swage tube and crimp the brass tube with a crimping tool or pliers.



8. If additional crimping is needed a small C-Clamp may be used for additional crimping pressure.



9. Cut off excess cable as shown



10. A drop of thin CA may be applied to the swage tube to help secure the cable. Attach a metal threaded RC link to the threaded coupler.
11. Repeat above steps for the other side rudder cable.



12. Attach the RC links to the rudder servo arm and then attach the servo arm to the rudder servo as shown.



Rudder Control Horn Installation

1. Gather the rudder control horn parts as shown below. 2 ball link assemblies, 2 left and 2 right side control horns. Assemble the ball links between the control horns as shown. Secure with nylon lock nut. Start with the center hole in the control horn. The ball link may be moved up or down for more or less control throw.



2. Place the control horns over the predrilled mounting holes.



3. Use a drop of thick CA glue on each screw as shown.



4. Mount rudder control horns using six wood screws.
5. Repeat the above steps for mounting the other side rudder control horn.



6. Plug the rudder servo into the rudder channel of the receiver and power up. Turn on transmitter to center rudder servo. Ensure servo trim and sub trims are centered.

Note: On metal geared servos use Loctite for all Servo arm mounting screws.



7. Tape the rudder balance tab to the top leading edge of the vertical fin in the neutral position as shown. This ensures the rudder is straight when the cables are attached.



8. Remove ball links from the rudder control horns. Attach two threaded couplers to ball links as shown. Thread couplers halfway into ball links to allow for correct adjustment.



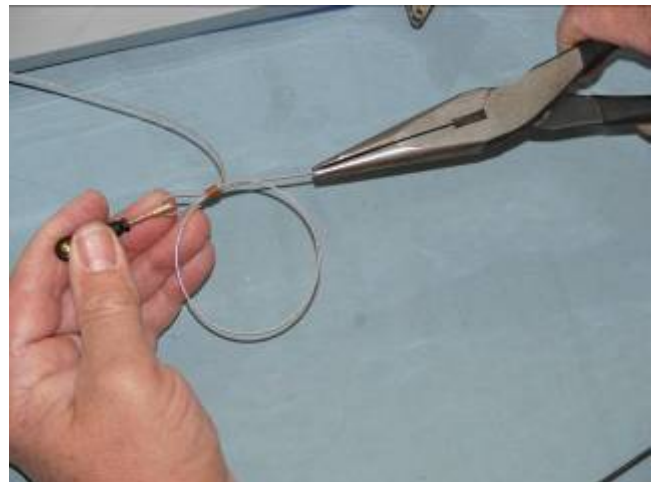
9. Hold the threaded coupler below the cable attach holes to thread into the ball link as shown. Do not hold coupler at the top where the cable hole is located. This may cause burrs on the coupler that can eventually cut the rudder pull cable.



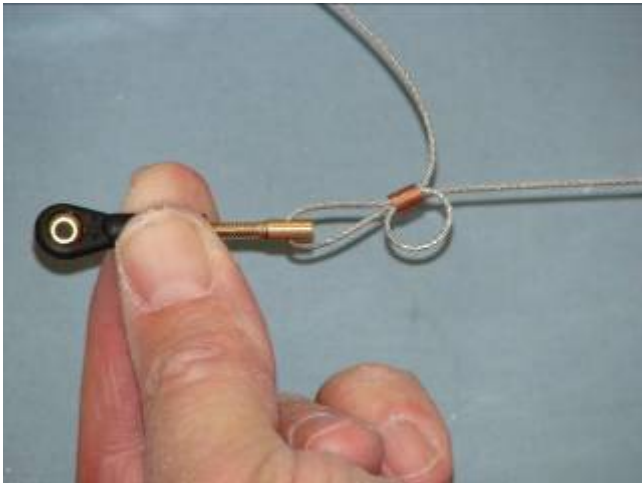
10. Attach ball link to rudder control horn on both sides of the rudder. Thread the rudder cable through a brass swage tube, then the threaded coupler, and back through the brass swage tube on both sides. Pull light tension on the cable through the coupler on both sides as shown. The loop through the coupler should be approximately 1/2" long.



11. Loop the cable back through the brass swage tube as shown.



12. Tighten the second loop through the brass swage tube as shown.



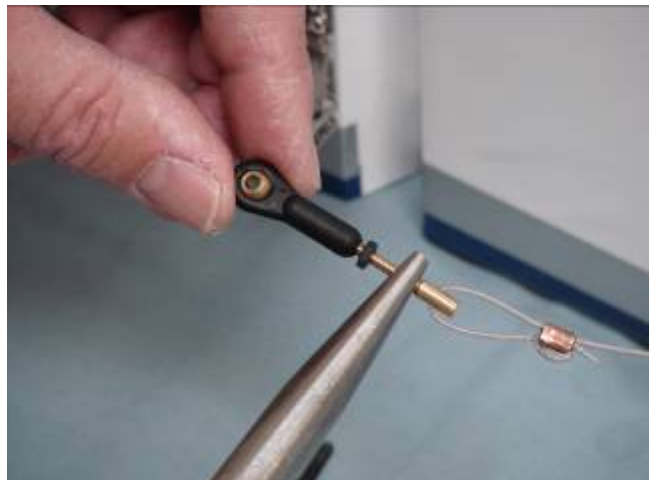
13. Crimp the brass tube with a crimping tool or pliers.



14. Cut off excess cable. A drop of thin CA may be applied to the swage tube to help secure the cable.



15. Hold the threaded coupler below the cable attach holes to thread into the ball link as shown. Do not hold coupler at the top where the cable hole is located. This may cause burrs on the coupler that can eventually cut the rudder pull cable. Thread coupler in or out at ball link end to achieve correct length to fit into rudder control horn..



16. Re-attach ball link to rudder control horn on both sides of the rudder.

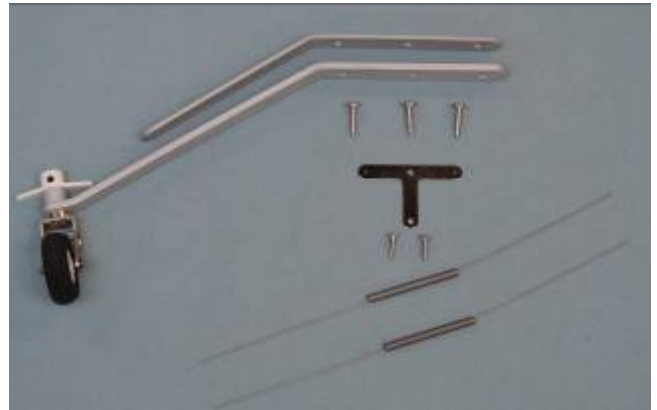


17. With radio on, and rudder centered, adjust rudder pull-pull cables to desired tension by screwing in or out on the threaded couplers and or ball links. Make all adjustments with the rudder servo still powered up. Ensure the servo does not bind at center or at either end point.



Tail Wheel Installation

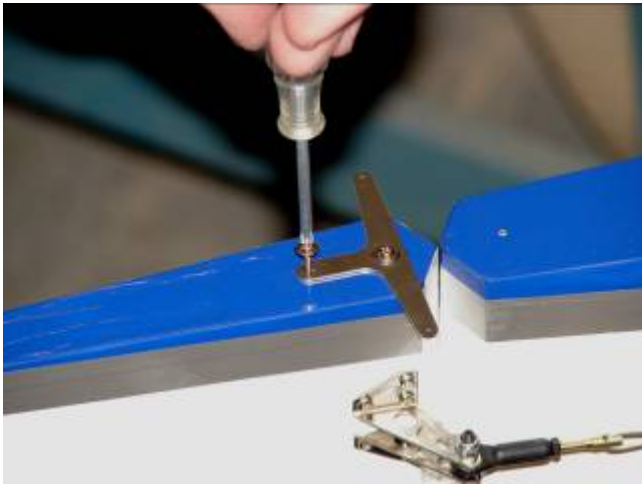
1. Gather the tail wheel parts shown below. Tail wheel strut and leaf spring, 3 tail wheel mounting screws, steering tiller, 2 tiller mounting screws, and 2 steering springs.



2. Apply a drop of thick CA to the tiller arm mounting screws before inserting in the pre-drilled holes.



3. Mount the tail wheel steering tiller using two wood screws.



4. Place the tail wheel leaf spring on top of the tail wheel strut. Position the tail wheel and spring on the bottom of the fuse. Place a drop of thick CA on tail wheel strut mounting screws before inserting in the pre-drilled mounting holes on the bottom rear of the fuse.



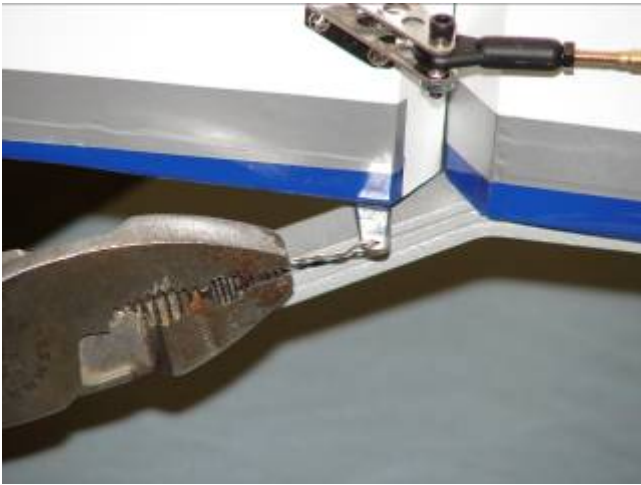
5. Mount the tail wheel struts and leaf spring using three wood screws.



6. Attach the steering springs on both sides of the tail wheel to the rudder tiller and tail wheel tiller. Center the springs between both tillers.



7. Use pliers to twist spring ends closed around the tillers after desired tension and direction adjustments are complete.



8. Tail wheel final assembly is complete.



MAIN LANDING GEAR ASSEMBLY

Main Landing Gear Installation

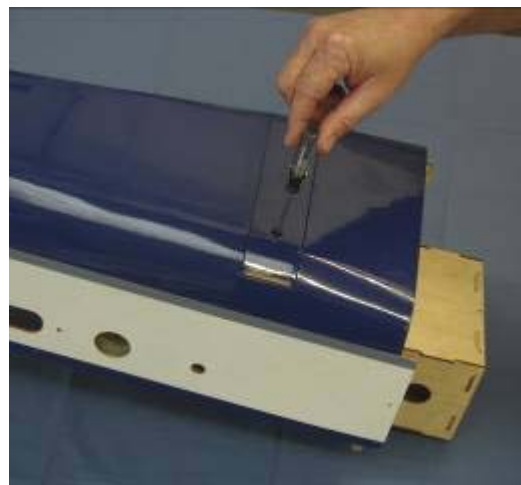
1. Gather the landing gear parts as shown below. Landing gear strut, 4 mounting bolts, washers, and lock washers, 2 wheels, 2 axles, and 4 wheel collars as shown below.



2. Gather the gear strut, 4 mounting bolts, washers, and lock washers, as shown below.



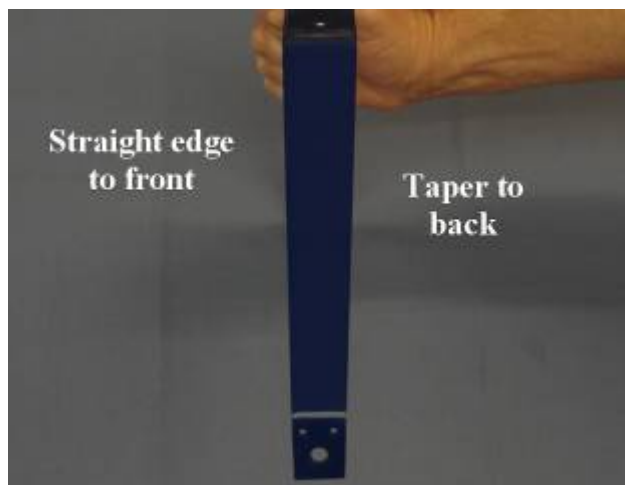
3. Remove landing gear cover screws.



4. After screws are removed, remove the landing gear cover.



5. Note that the trailing edge of the landing gear strut is tapered. The tapered edge goes toward the rear of the fuse.



6. Use a drop of blue Loctite on landing gear bolts before attaching the landing gear.



7. Bolt landing gear strut to fuse with 4 bolts, lock washers and flat washers. Ensure tapered edge of the gear strut is facing toward the rear.



8. Reinstall the gear cover.

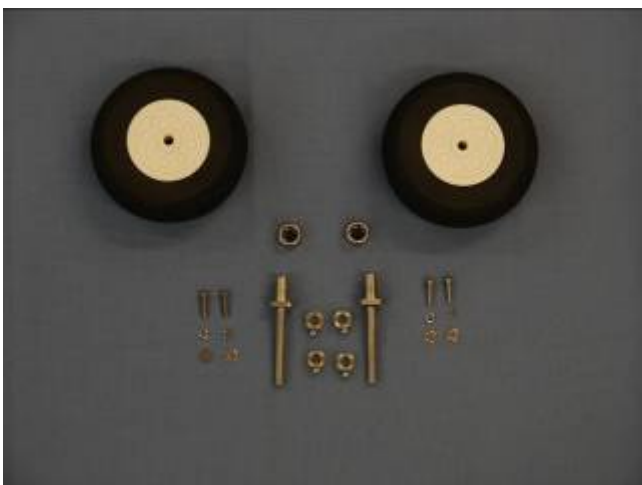


9. Use a drop of blue Loctite and reinstall the landing gear cover screws.



Wheels and Wheel Pants Installation

1. Gather the wheels, axles, and wheel collars as shown below.



2. Use a drop of blue Loctite on landing gear axle bolt before attaching the landing gear axle with the nylon lock nut.



3. Use two wrenches to screw the lock nut on the wheel axle. **Do not tighten securely yet.**



4. Align the flat sides of the axle bolt vertical and snug the lock nut against the landing gear strut. **Do not tighten securely yet.** Then align the wheel pant slot over the axle bolt as shown below. Slide the wheel pant slot over the flat sides of the axle bolt and align the wheel pant with the wheel pant mounting holes.



5. Install and tighten the wheel pant mounting bolts to hold the wheel pant in place.

Note: Do not use Loctite at this time.



6. Now tighten the axle nut against the landing gear strut with a small wrench while using the wheel pant slot to hold the flat sides of the axle bolt in alignment. Tighten the lock nut enough so that the axle bolt will not rotate during final tightening.



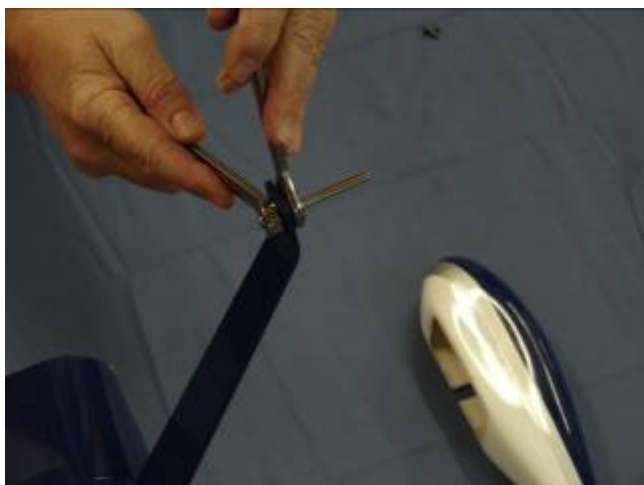
7. Now remove the wheel pant mounting bolts.



8. Remove the wheel pant.



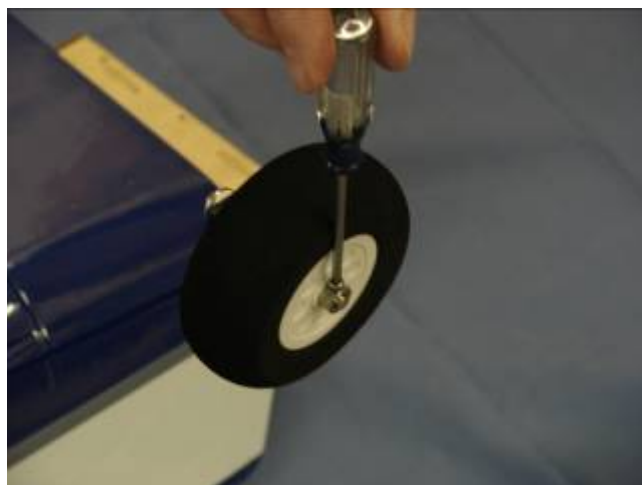
9. Use wrenches to permanently tighten the axle to the gear strut.



10. Install the inner wheel collar next to the axle bolt. Using Loctite, tighten the inner wheel collar in place.



11. Install the wheel and outer wheel collar. Use blue Loctite on the wheel collar set screw before final tightening.



12. Slide the lock washer then the flat washer on the wheel pant mounting bolts. Use blue Loc-tite on the bolts before final tightening.



13. Install wheel pants with two mounting bolts and Loctite.



14. Repeat above steps for other wheel and wheel pant.

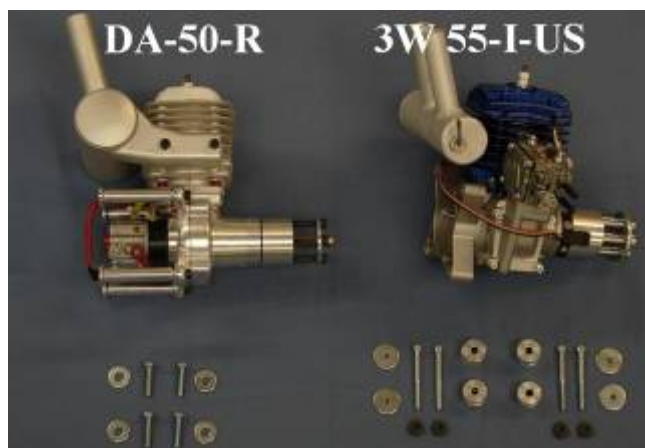


ENGINE, THROTTLE, MUFFLER, CANISTER OR PIPE INSTALLATION

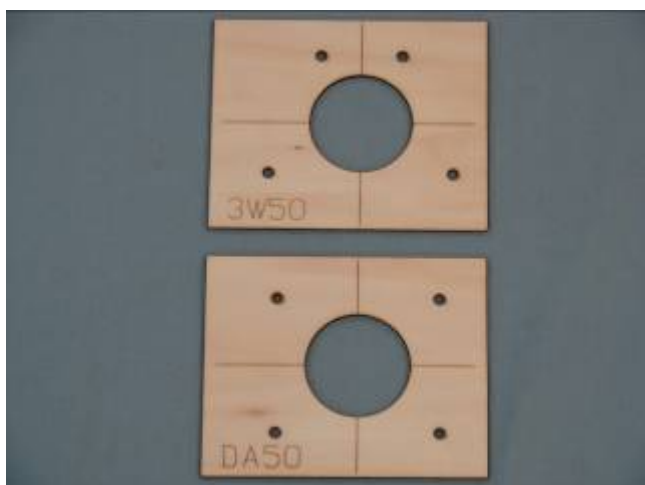
Engine Installation

1. The 50cc EXTRA 260 will accept a wide range of engine types. The DA-50 rear carburetor and the 3W-55 rear and side carburetor engines with Pitts style mufflers, canisters, and pipes were mounted. Illustrations for each type of installation are provided below.

NOTE: Distance from front of firewall to engine prop hub is 6 1/4" to 6 3/8". Depending on your engine selection. The only difference will be the gap between the cowling and spinner back plate.



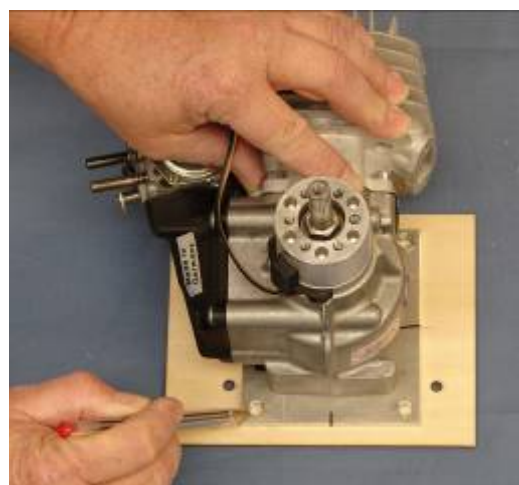
2. Locate the laser cut engine mounting template for either the DA-50 or 3W-55. If other engines are used the templates may be modified for any mounting pattern.



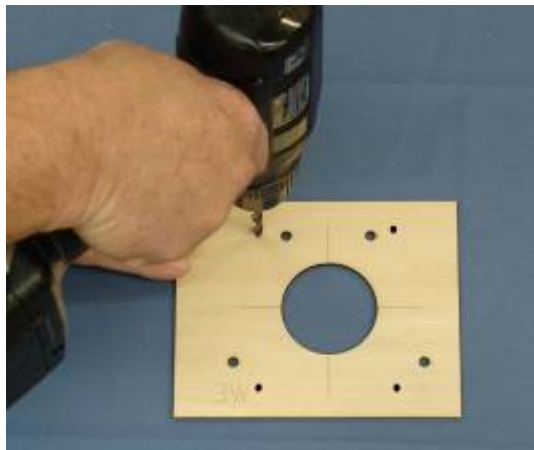
3. To modify mounting template to accommodate your engine of choice.. Line up the template with the engine thrust lines.



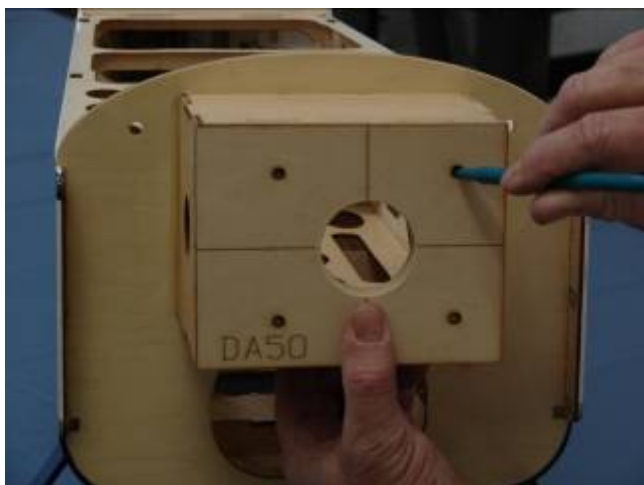
4. Mark the location of the engine mounting holes on template.



5. Use a 1/4 drill to drill the engine mounting holes.



6. Align the template with the firewall and mark the location of the engine mounting holes.



7. It is recommended to center punch the location of the engine mounting holes prior to drilling.



8. Use a 1/4 drill to drill the engine mounting holes in firewall.



Rear Carburetor Engine Installation

If installing canister muffler or tuned pipe, skip to canister installation on page 43

1. The following instructions are for a rear carburetor style engine with **Pitts style muffler**. The DA-50 rear carburetor with **2 1/2"** stand offs is shown in the following steps.

Note: 2 1/2" stand offs are supplied with the DA 50.



2. Mount the engine using the engine manufacturer recommended bolts (not supplied) and blue Loctite.

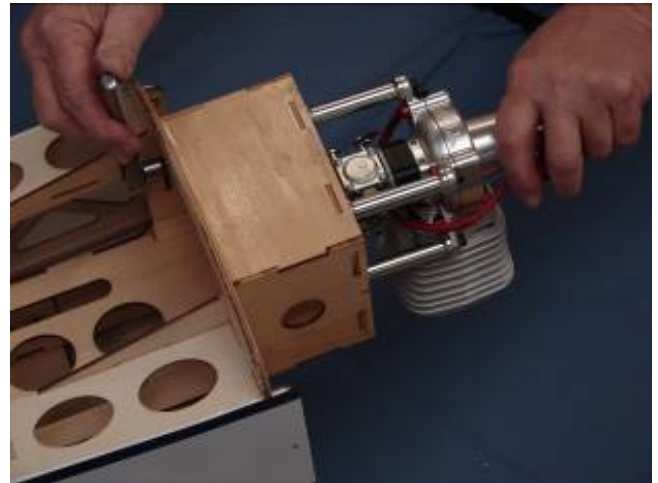
Use the provided aluminum spacers to make the front of the engine prop hub (back of spinner) approximately 6 1/4" to 6 3/8" inches from the front of firewall.

DA-50 with 2 1/2" standoffs = 6 1/4"
3W-55i with 2 6mm standoffs = 6 3/8"



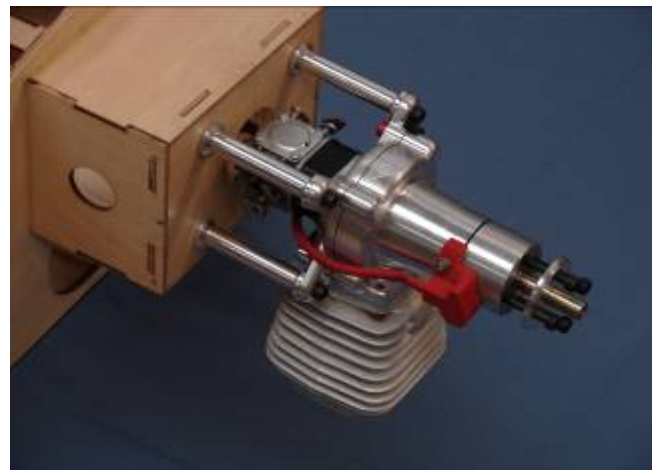
3. Securely tighten the engine to the firewall as shown. We recommend using 1/4-20 bolts and lock nuts for engine mounting. You may also use blind nuts behind the firewall for engine mounting.

Note: The use of large fender washers is recommended between the spacers and firewall to distribute loads. Washers are **Not Supplied!**

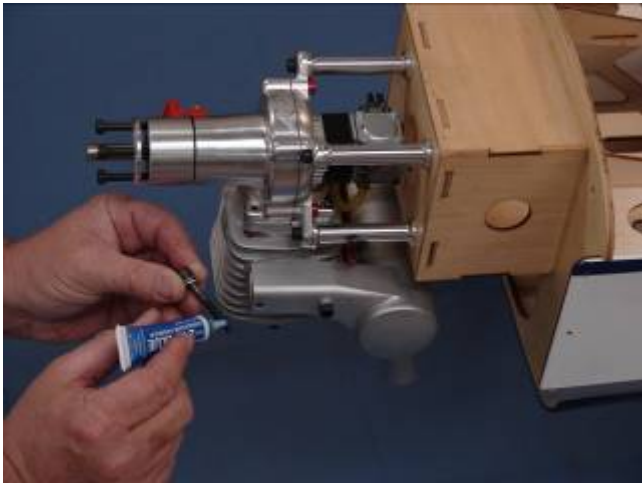


4. Typical rear carburetor engine installation

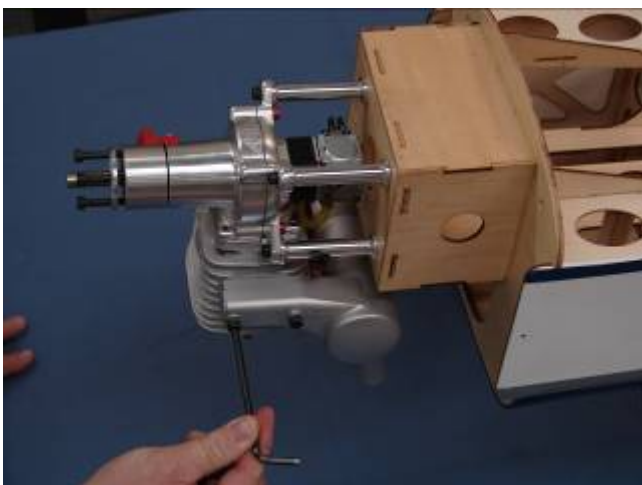
DA 50 with 2 1/2" stand offs is pictured below.



5. Use blue Loctite to install the Pitts muffler bolts. Remember to always use the engine manufacturer suggested gasket for proper seal.

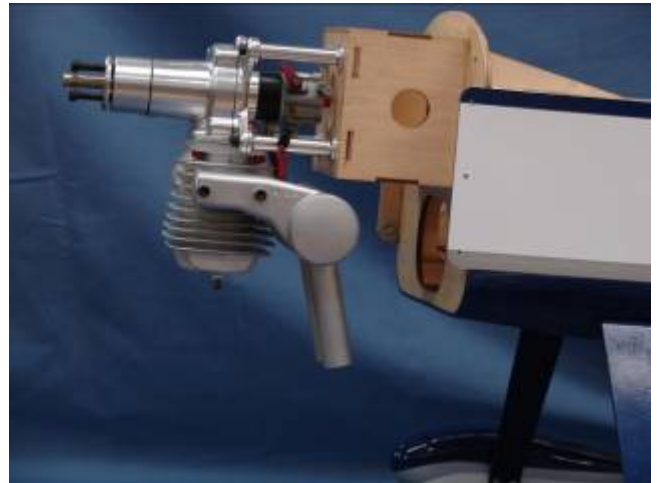


6. Securely tighten the muffler bolts to the engine.



7. DA-50 with Pitts style muffler mounted.

Note: 2 1/2" aluminum stand offs used with no other stand offs required.



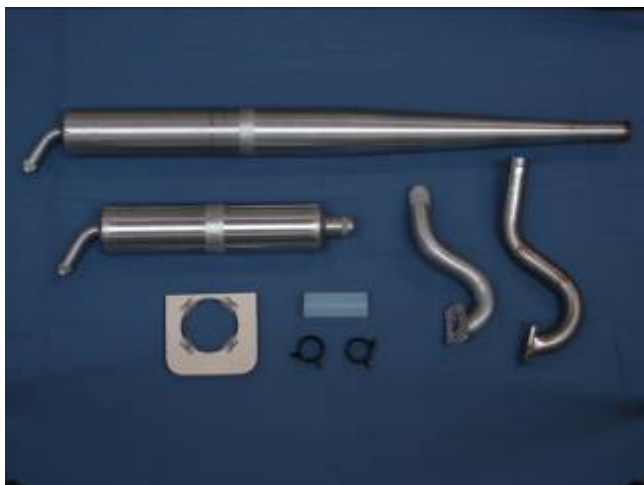
8. 3W-55i-US with Pitts style muffler mounted.
3W-55i with 2 6mm standoffs = 6 3/8"

Note: Two 6mm aluminum spacers used at each mounting bolt to archive proper engine stand off from front of firewall. Aeroworks provided.



Pipe or Canister Muffler Installation

1. The 50cc EXTRA 260 can accept either a tuned pipe or canister muffler installation. Gather the pipe or canister muffler parts as shown below. 1 header, Teflon coupler, 2 clamps, pipe or canister, and supplied silicon tubing and plywood mount.



2. The canister muffler installation will be illustrated first. If the canister muffler will be used, gather the canister muffler parts shown below.



Canister Tunnel Preparation

1. Iron the bottom covering to ensure it is tight and well sealed to the wood.



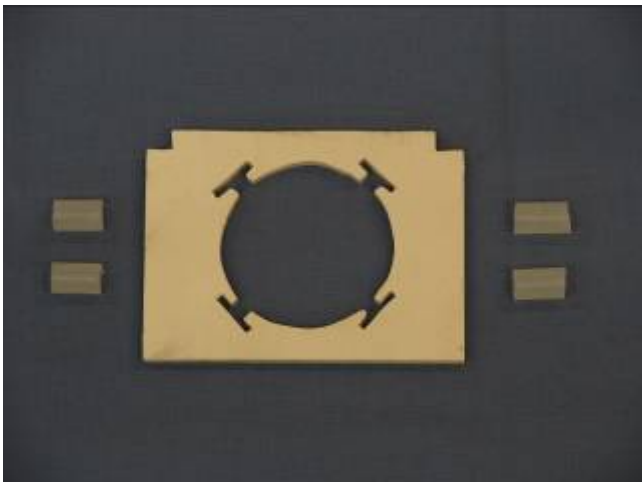
2. Use a hobby knife to remove the covering from the bottom of the fuse between the two formers and inside stringers as shown below.



3. Bottom covering removed between the fuse formers and stringers shown.

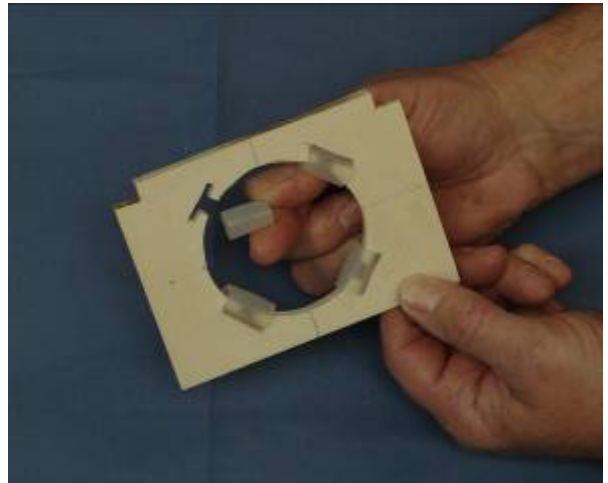


4. Gather the plywood canister holding bracket and silicone tube insulators as shown.



5. Insert the silicon tube insulators in the slots of the wood canister holding bracket as shown.

Note: It may be necessary to cut the silicon tube into 4 separate pieces at 1" lengths.



6. Apply thick CA glue to the front of the canister holding bracket where it will contact the front former.

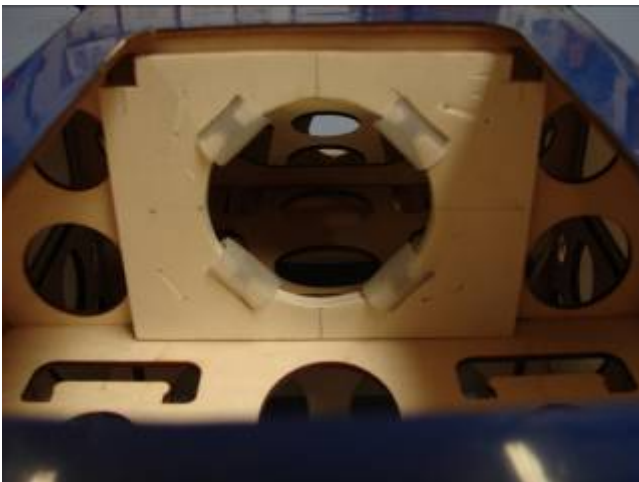
Note: It is recommended to test fit bracket prior to gluing to ensure good fit.



7. Inset the canister holding bracket against the rear side of the front former and apply CA glue to the top and bottom where it contacts the fuse former and fuse floor.



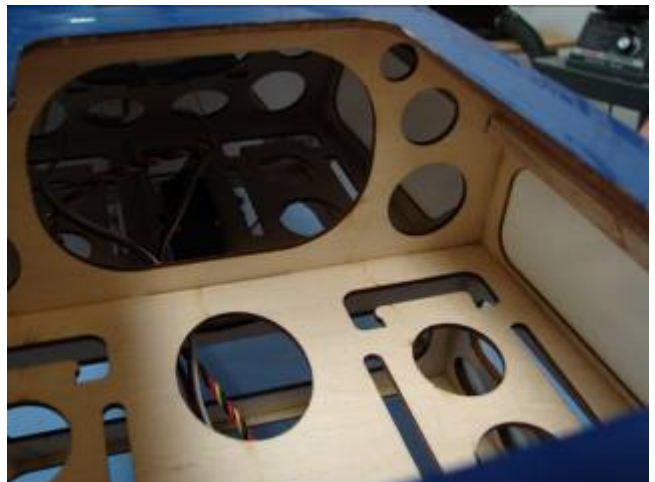
8. Canister holding bracket shown installed behind front former.



9. Gather the pre-cut balsa sheeting for closing off the rear section of the canister tunnel.



10. Rear former shown where sheeting will be installed.



11. Using thick CA, glue in place one half section of balsa sheeting to the front side of rear former.

Note: It is recommended to test fit balsa sheeting prior to gluing to ensure good fit.

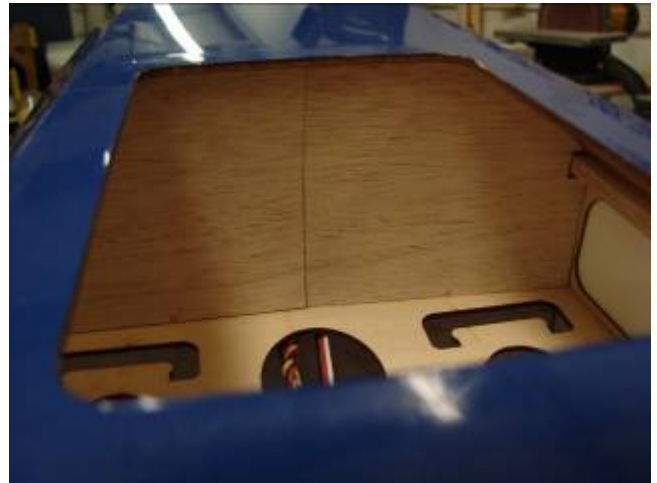


12. Glue in the other half section of balsa sheeting to rear former.

Note: It is recommended to test fit balsa sheeting prior to gluing to ensure good fit.



13. Canister tunnel rear balsa sheeting shown installed. Glue in securely around all edges.



14. Turn the fuse right side up. Run the elevator and rudder servo wires through the small hole in the former forward of the rudder servo as shown.



15. Dry fit the top balsa sheeting to front side of former and mark the location for the antenna guide tube. Drill a 1/8" hole for the antenna tube to pass through the balsa sheet. Using thick CA, glue sheeting to front of former.



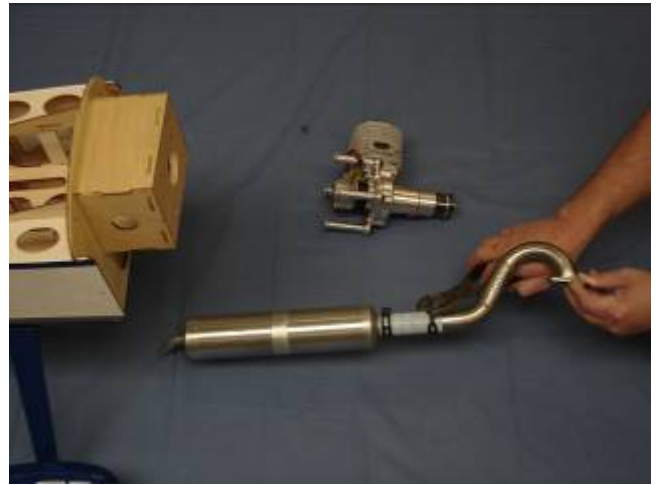
16. Pass the antenna tube through guide hole and press sheeting tight against former as shown. Ensure the servo wires pass through the bottom notch as shown.



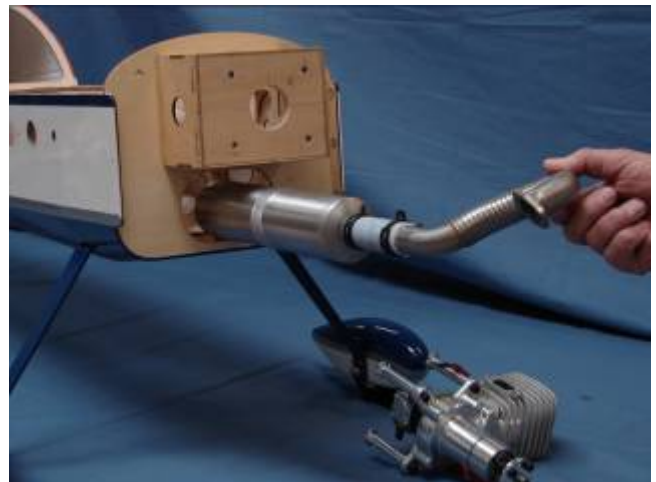
Canister and Header Installation

1. Assemble the canister to the header pipe with the Teflon coupler and clamps in accordance with manufactures instructions.

Note: It is easier to install the canister, header assembly prior to installing the engine.



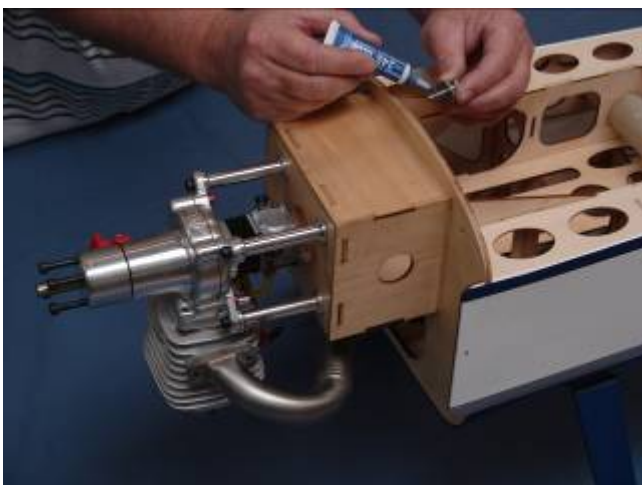
2. Insert the canister into the tunnel and through the canister holding bracket insulators.



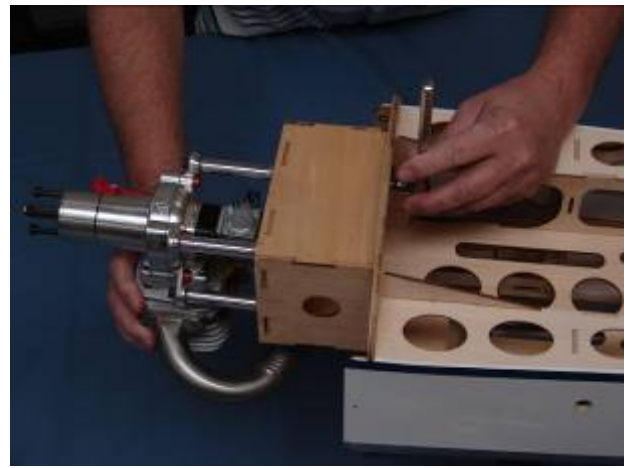
3. Canister and header inserted into the tunnel.



4. Install engine, refer to pages 39-40 for engine installation. Use blue Loctite on all engine bolts.



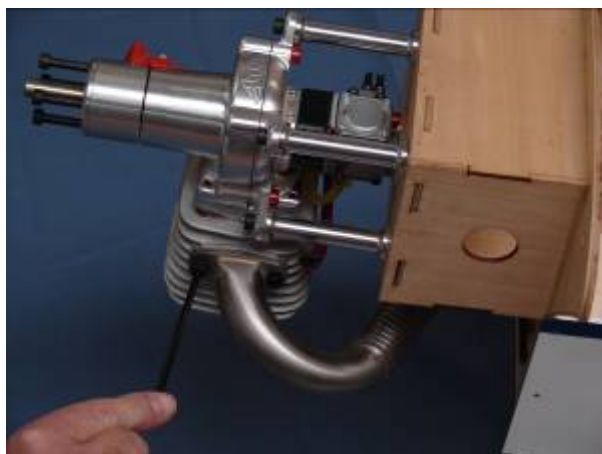
5. Securely tighten the engine mounting bolts to the firewall.



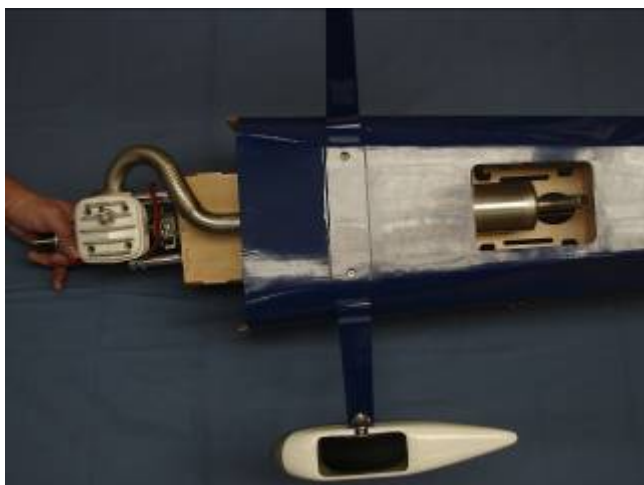
6. Use blue Loctite to secure header pipe bolts to engine. Remember to always use the engine manufacturer suggested gasket for proper seal



7. Securely tighten header pipe bolts to engine.

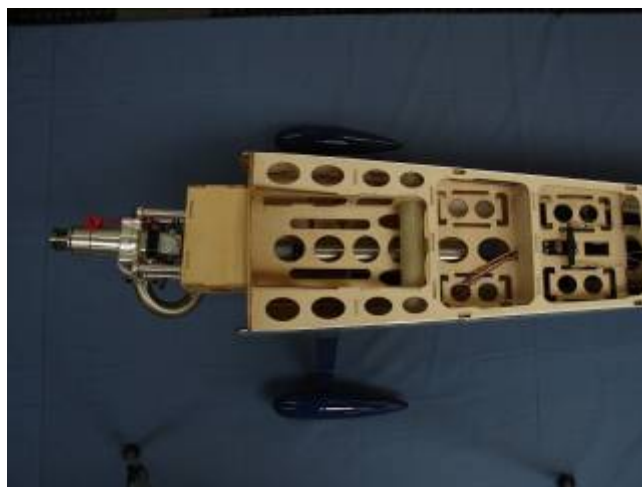


8. Bottom view of the DA-50 and final canister muffler installation.



9. Top view of the DA-50 and final canister muffler installation.

Note: When top hatch is secured in place the fuselage will be sealed for proper air flow. Additional balsa sheeting can be applied to the underside of the radio floors if desired. We have also used Ultracote on the top side of the radio floors to seal the lighting holes in the fuselage.



Tuned Pipe Tunnel Preparation

1. If the tuned pipe will be used, gather the header and tuned pipe parts as shown below. 1 header, coupler, 2 clamps, and tuned pipe assembly.



2. Iron the bottom covering to ensure it is tight and well sealed to the wood.



3. Use a hobby knife to remove the covering from the inside edges between the middle and rear formers and bottom stringers in the pipe tunnel opening.



4. Use a hobby knife to remove the covering from the inside edges between the middle and front formers and bottom stringers in the pipe tunnel opening.

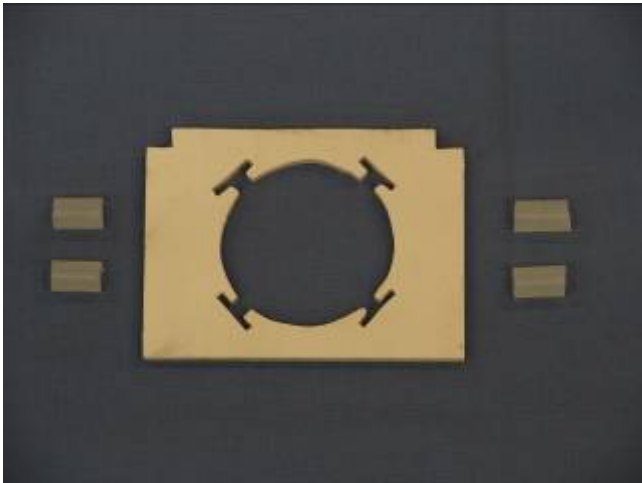


5. Bottom covering removed from the inside edges of the bottom pipe opening.

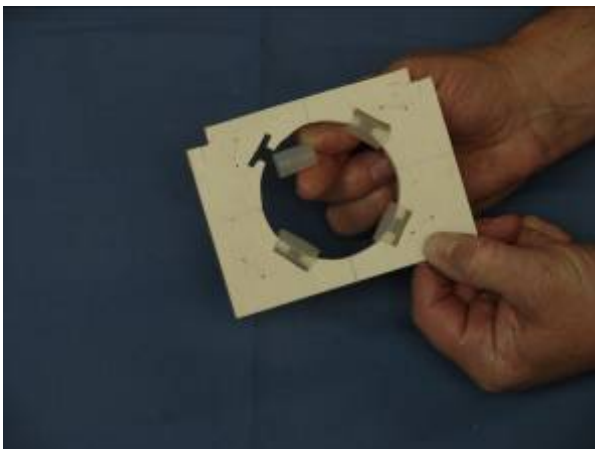


6. Gather the pipe holding bracket and silicone tube insulators as shown.

Note: It may be necessary to cut the silicon tube into 4 separate pieces at 1" lengths.



7. Insert the silicon tube insulators in the slots of the wood pipe holding bracket as shown.



8. Ensure the elevator servo wires are routed through the small holes in the former just behind the rudder servo.



9. It will be necessary to lightly sand the tabs in the former to get a good flush fit of the canister holding bracket against the fuselage former.



10. Apply thick CA glue to the rear of the pipe holding bracket where it will contact the front of the fuselage former.

Note: It is recommended to test fit bracket prior to gluing to ensure good fit.

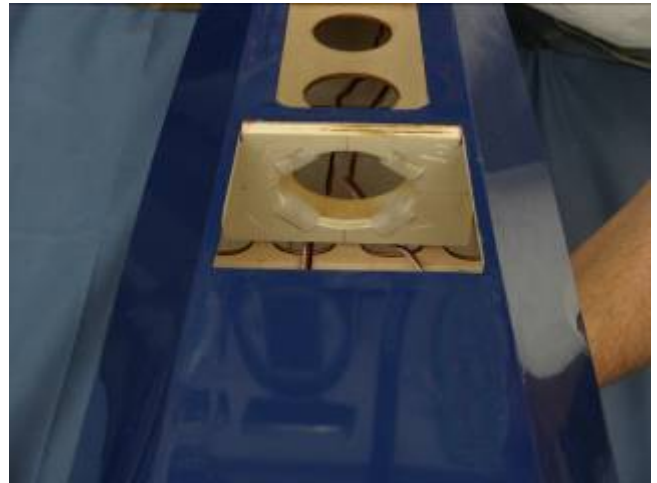


11. Insert the pipe holding bracket against the front former and hold in place until glue dries.

Note: Holding bracket fits to top of former and notches in holding bracket fit between bottom stringers.



12. Securely glue the pipe holding bracket to the fuselage former.



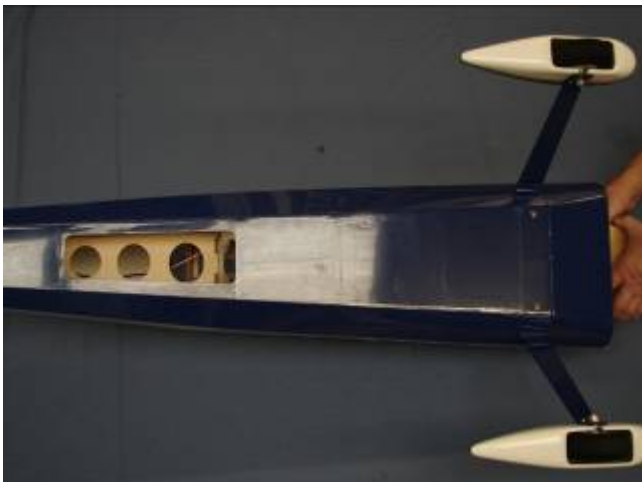
13. Canister holding bracket shown installed in front of former.



14. Use supplied Ultracote to recover the front bottom pipe opening.



15. Rear bottom pipe opening is left open for pipe stinger and air flow exit.



Tuned Pipe Installation

1. Insert pipe into tunnel.



2. Insert pipe through pipe holding bracket insulators as shown. Pipe stinger should exit through the opening in the bottom of the fuse.



3. Bottom view of the tuned pipe installation.



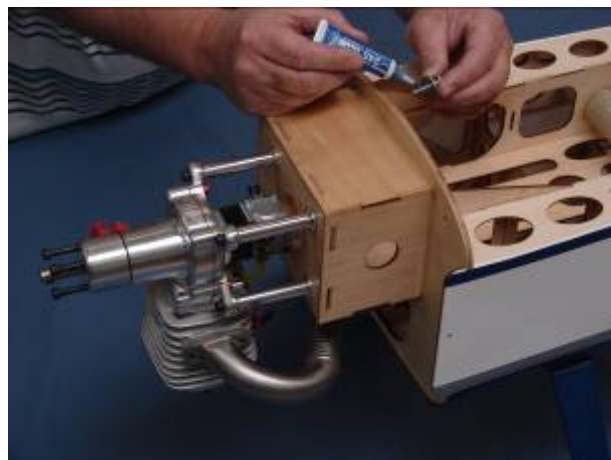
4. Assemble the tuned pipe to the header pipe with the Teflon coupler and clamps in accordance with manufactures' instructions.



5. Tuned pipe and header pipe inserted into the tunnel.



6. Install engine, refer to engine installation on pages 39-40. Use blue Loctite on engine bolts.

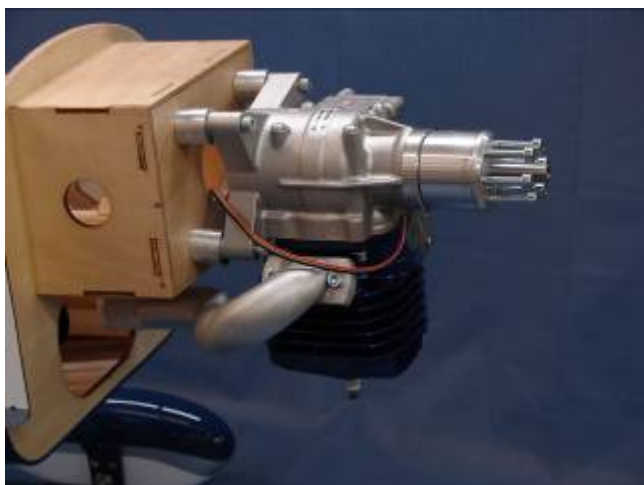


7. Top view of DA-50 and final tuned pipe installation.

Note: Additional balsa sheeting can be applied to the underside of the radio floors to help with proper air flow and exit. We have also used Ultracote on the top side of the radio floors to seal the lighting holes in the fuselage.



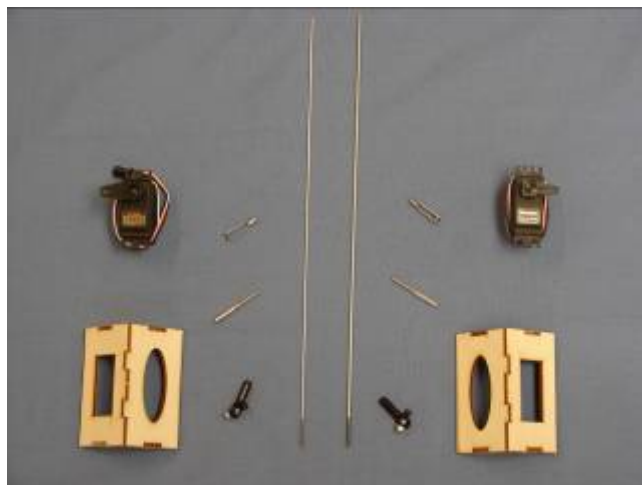
8. 3W-55 with tuned pipe and header installed.



Throttle Servo and Choke Installation

1. Gather the left and right plywood throttle and choke servo mounting trays, the throttle and choke servos and pushrod parts as shown below.

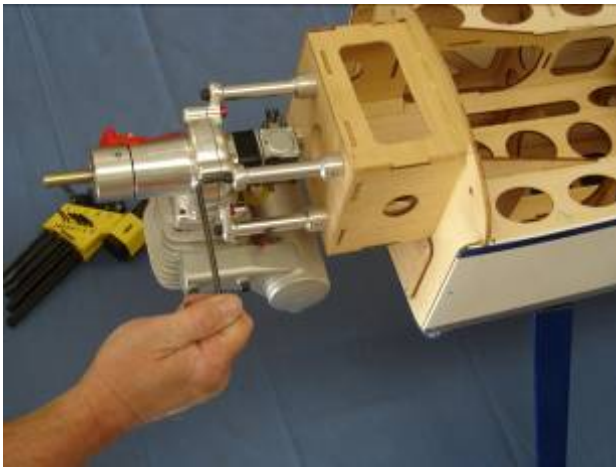
2 x 4-40 metal rods thread at one end
2 x 4-40 ball links
2 x 4-40 threaded solder couplers
2 x 4-40 threaded quick links



2. Use a 1/4" bit to drill a pushrod exit hole in the firewall in line with the engine carburetor throttle arm.

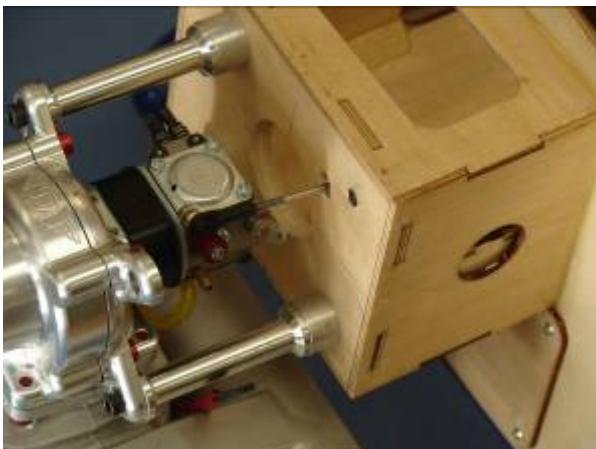


3. It is recommended to remove the top engine mounting hardware from the same side as your throttle arm. This will make attaching the ball link to your throttle arm much easier.



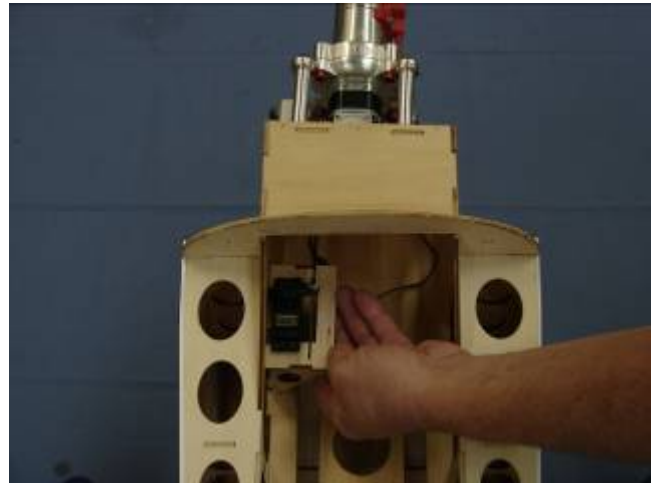
4. Temporarily Attach the ball link to the throttle pushrod and secure to the carburetor throttle arm with a 4-40 bolt and nylon lock nut.

Note: Do not Loctite at this step

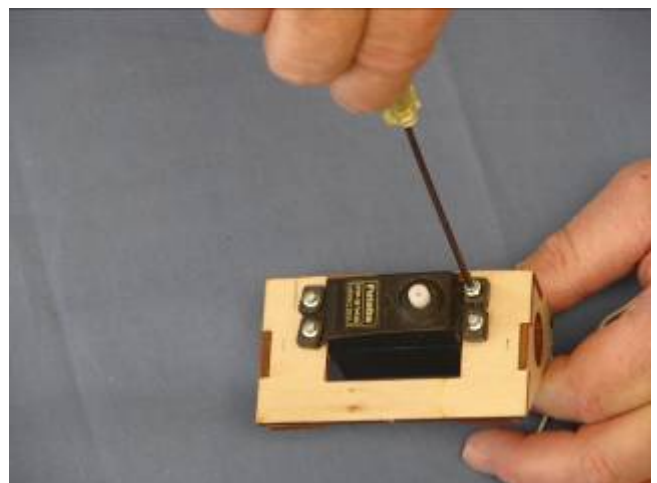


5. Dry fit the servo tray to the fuselage. The throttle servo is mounted on the side of the fuse that aligns with the engine carburetor throttle arm. Use the throttle pushrod to help line up proper mounting position

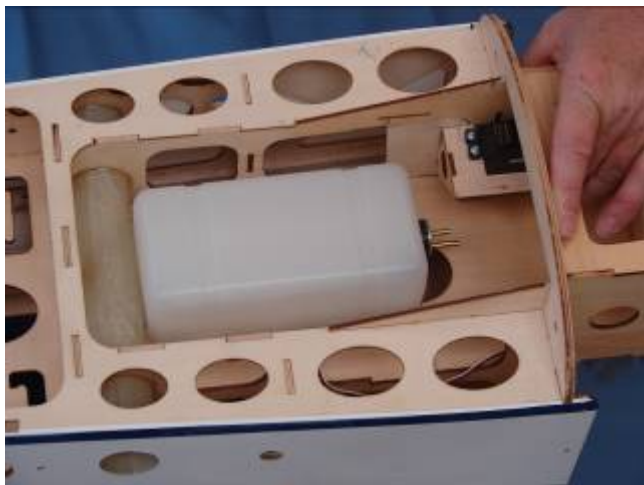
Note: If properly lined up with hole in engine box cover will allow easy access to servo arm and servo mounting screws



6. Drill throttle servo mounting holes and install throttle servo to mounting tray.



7. With fuel tank temporarily laid in position trail fit servo tray to fuselage. Ensure throttle servo mounting tray does not interfere with fuel tank installation.



8. Mark the location of the servo mounting tray on the fuse side.



9. Ensure the throttle servo and servo tray are in the correct position to allow the throttle pushrod to actuate the carburetor throttle arm with out binding or rubbing against the hole in the fire-wall.

Note: If positioned properly you will be able to access servo mounting screws through top hatch and back of former.



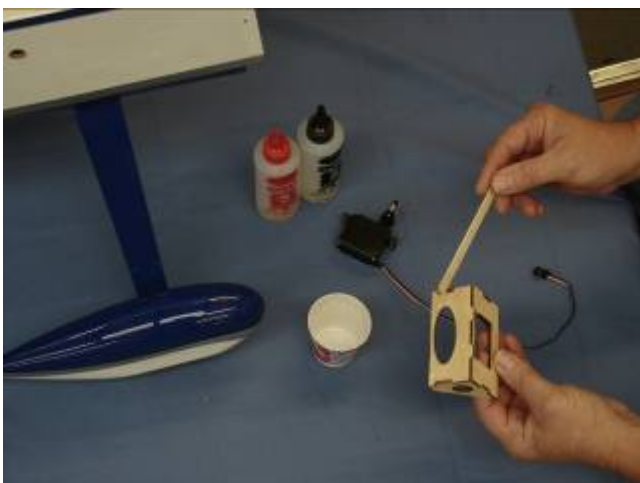
10. Mark the locations on the servo tray where the fuse sides contact the servo tray to show where to place the epoxy when gluing the tray inside the fuse.



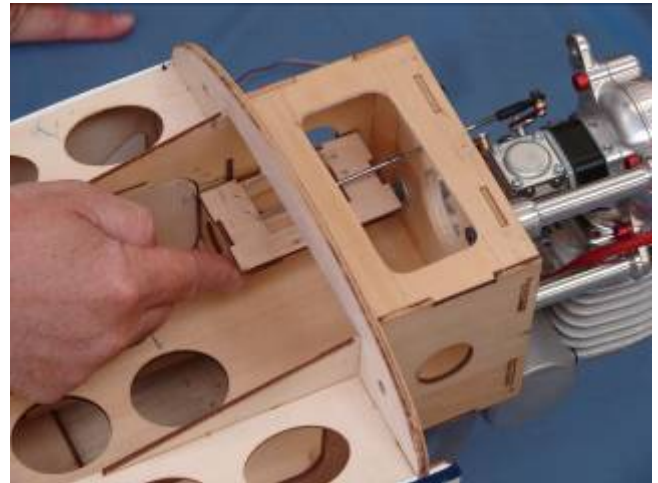
11. Prepare to epoxy the servo mounting tray to the fuse side. Remove the servo from the servo tray to protect against getting any glue onto the servo



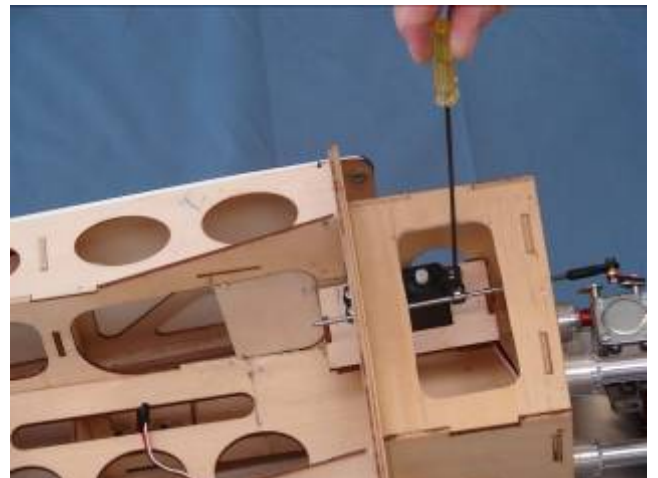
12. Apply epoxy to side of servo tray that will contact the fuse side on the locations previously marked.



13. Install the servo mounting tray to the fuse side aligned with the marks. Hold in place until the epoxy cures.



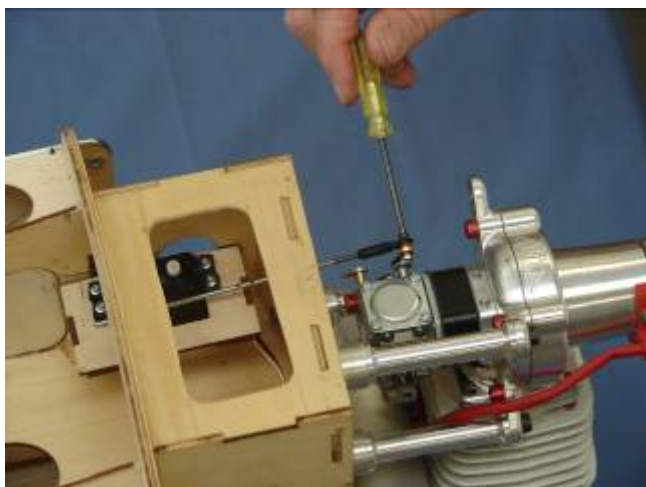
14. Reinstall throttle servo to tray.



- 15.. Thread the quick link half way onto the threaded coupler then install the quick link onto the throttle servo arm. Position the throttle servo arm at center travel and the carburetor arm at center travel. With the quick link attached to the throttle servo arm., mark the location to cut the throttle pushrod to correct length.



16. Remove ball link from throttle arm and remove the throttle pushrod.



17. Cut throttle push rod to correct length.



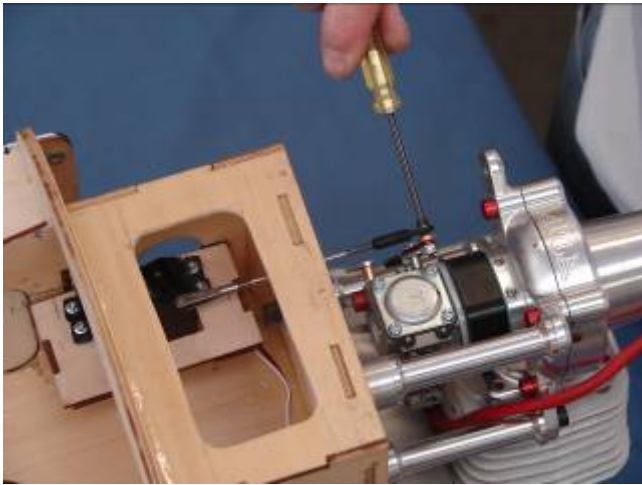
18. Using sand paper remove any paint from pushrod at location of solder joint. This will give you a stronger solder joint. Place the threaded coupler over the pushrod. Solder coupler to throttle pushrod.

Note: It is recommended to use a good quality silver solder for a secure solder joint.

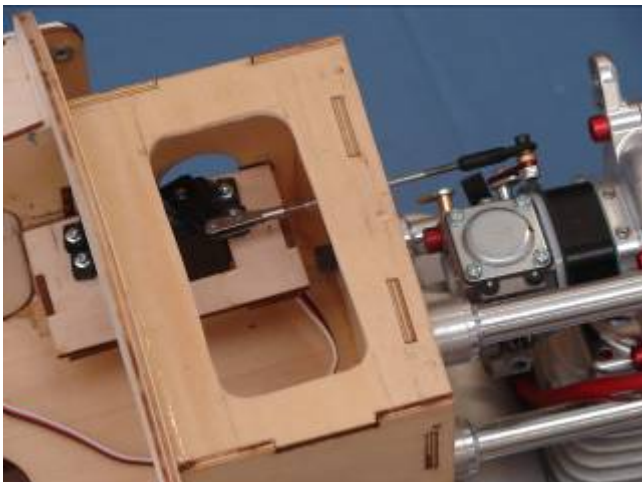


19. Attach the ball link to the throttle pushrod and secure to the carburetor throttle arm with a 4-40 bolt and nylon lock nut.

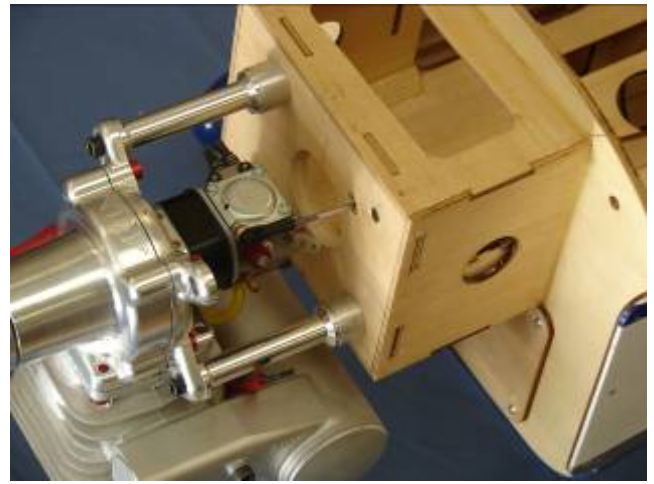
Note: Use Loctite to prevent ball link from vibrating loose



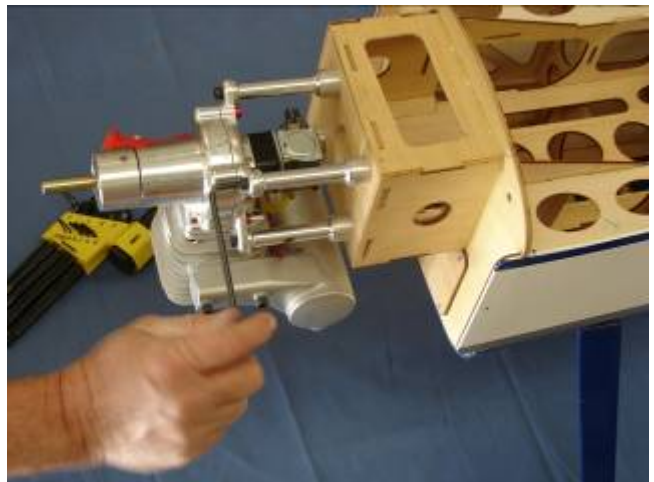
20. Attach quick link to throttle servo arm.



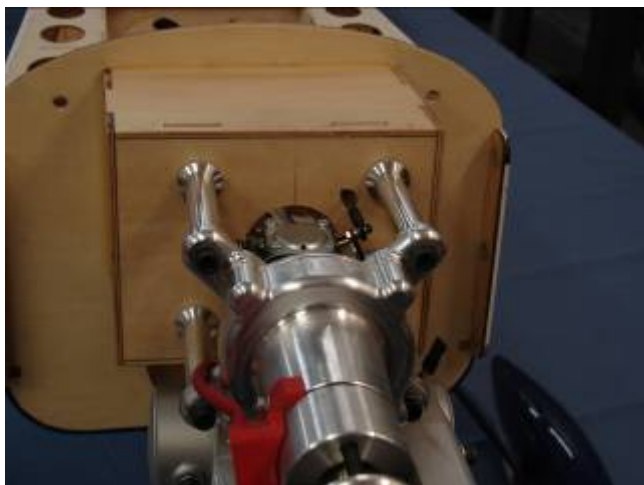
21. Ensure the throttle pushrod operates smoothly and does not bind or rub against the hole in the firewall.



22. Reattach the engine mounting if previously removed.

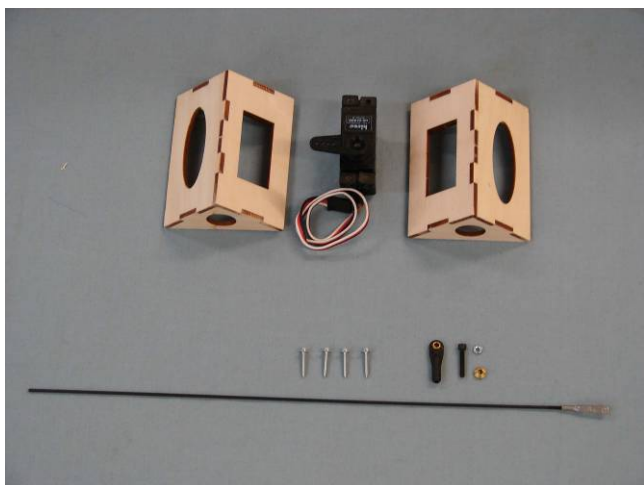


23. Front view of throttle pushrod installed.



Servo Actuated or Manual Choke

1. You can install a choke servo if desired. Use the same mounting steps as the throttle servo with the supplied hardware shown below.



2. If a manual choke will be installed gather the choke pushrod, ball link, wheel collar and nylon ties as shown. Wheel collar and ties are not supplied.



3. We recommend installing the carburetor choke pushrod as shown. Use nylon ties to provide support and holding friction for the choke pushrod. Place silicon fuel tubing over the wire pushrod to prevent damage from vibration and provide holding friction. Place a wheel collar on the end of the pushrod to provide a finger grip.



4. Position the pushrod to allow easy access through the front of the cowl air intake as shown.

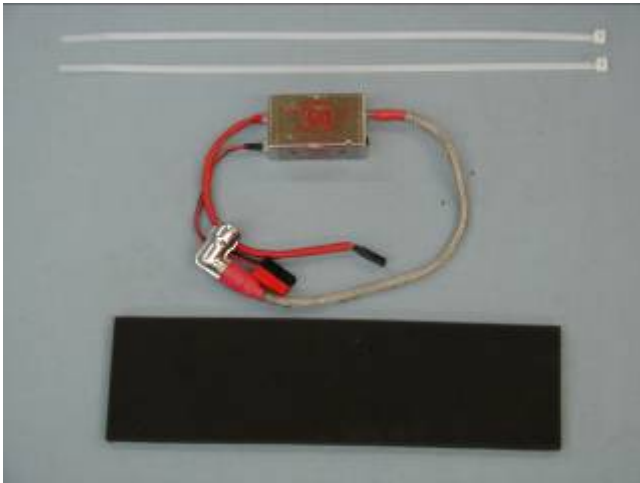
This is a easy, effective and light weight method for operating the engine choke.



IGNITION INSTALLATION

Ignition Installation

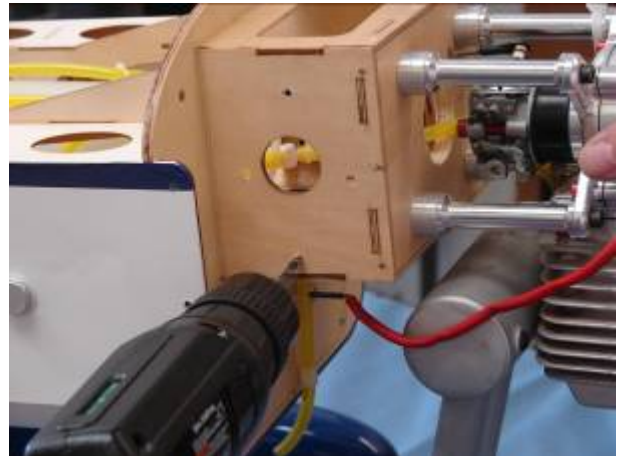
1. Gather the ignition and installation parts as shown below.



2. Position the engine ignition on the side of the engine mounting box and mark the location of the nylon tie holes as shown.



3. Use a 1/8" drill bit to drill the ignition mounting holes.



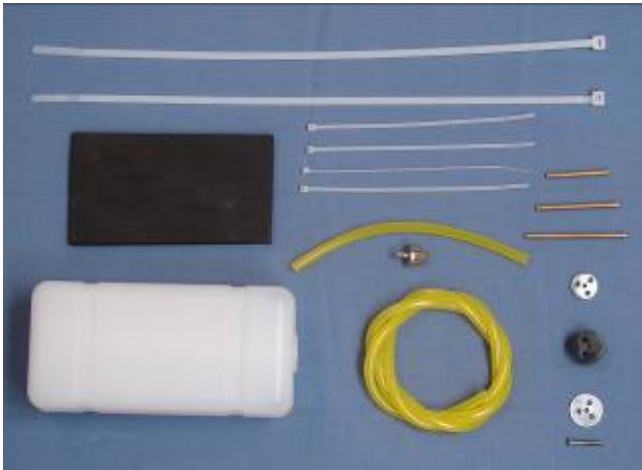
4. Mount the engine ignition module using nylon ties and foam rubber as shown. Route the ignition wire to the engine as shown and secure with nylon ties as necessary. Install the ignition battery and regulator if required as desired. A typical ignition installation is shown below. Secure all wiring from excess vibration.



FUEL TANK INSTALLATION

Fuel Tank Assembly

1. Gather the fuel tank parts as shown below. Fuel tank and hardware, fuel tubing, foam rubber and nylon ties.



2. Place the rubber stopper between front and rear metal stopper caps and insert the screw do not tighten. Assemble the fuel pick up tube with clunk and vent tube as shown into the stopper. Secure both ends of the fuel pick up tube with nylon ties as shown.

Note: It is highly recommended you solder a brass barb to the end of the fuel pick up tube to prevent the fuel line from coming loose due to the weight of the fuel clunk. (brass barb not supplied)



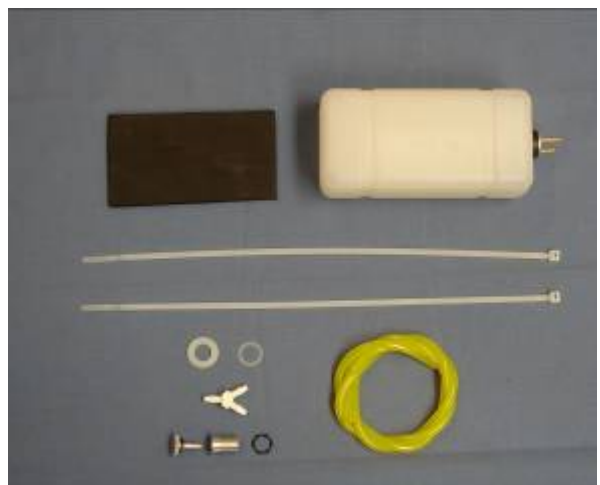
3. Insert the rubber stopper into the tank with the vent tube at the top of the tank. Secure the stopper with the screw as shown.

Note: Take care not to over tighten screw and strip rear metal stopper cap.



4. After the tank is assembled, gather the parts as shown below to install the tank inside the fuse. Fuel tank, foam rubber, fuel line, fuel “T”, fuel filler dot and large nylon ties.

Note: Fuel “T” and fuel filler dot are not included.



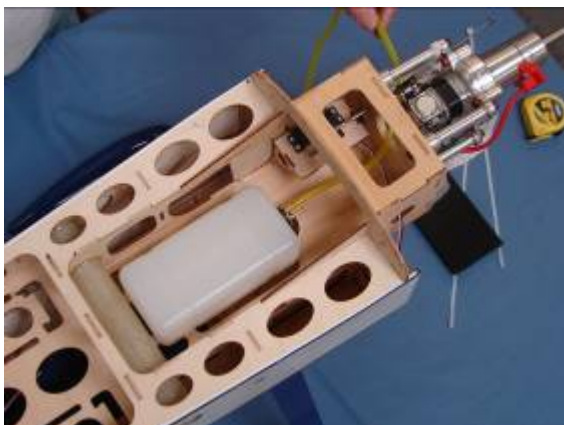
Fuel Tubing Installation

1. Attach the fuel line to the fuel pick up tube on the tank as shown.

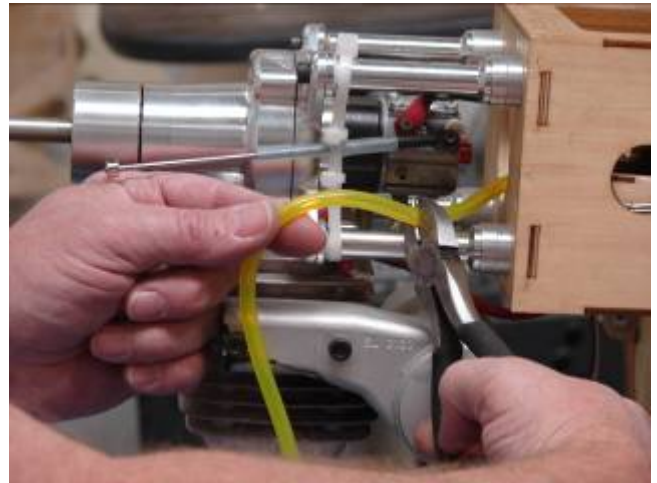
Note: It is highly recommended you solder a brass barb to the end of the fuel pick up tube to prevent the fuel line from coming loose (brass barb not supplied)



2. Place the fuel tank inside the fuse as shown. Run the fuel line forward through the firewall hole toward the engine as shown.

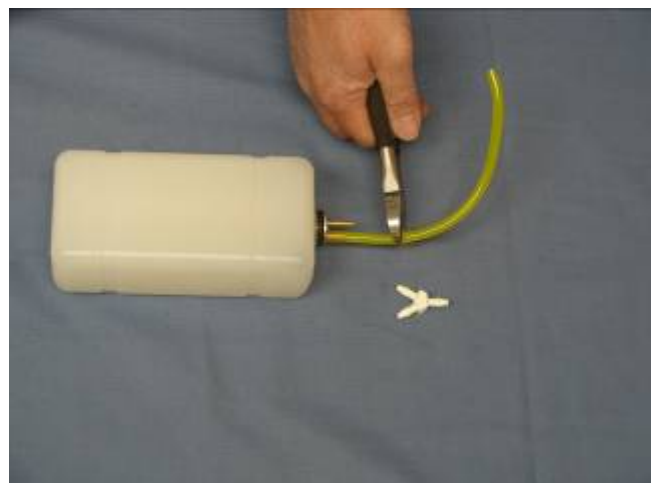


3. Cut the fuel line to the length required to attach to the carburetor fuel intake nipple.



4. Remove the tank and cut the fuel line just forward of the tank stopper as shown for preparation of installing fuel "T".

Note: Fuel "T" is not included.



5. Install the “ T “ fitting on the fuel line as shown. Use a heat gun to very slightly heat and soften the fuel tubing if necessary to insert the nipple.

Note: Glass cleaner or soapy water can also be used to help slide fuel line over fittings.

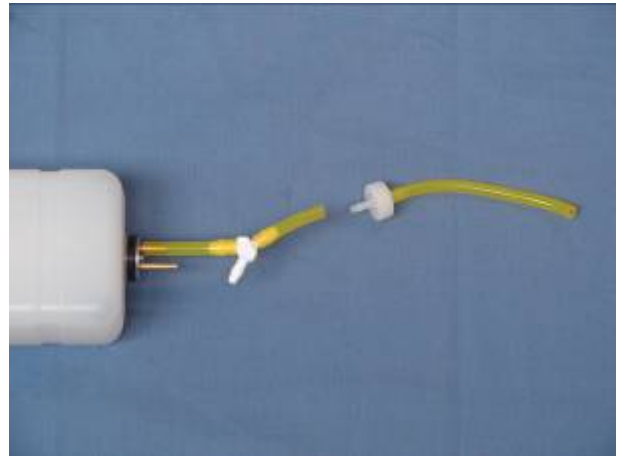


6. Assemble the fuel supply line as shown below.



7. Cut the fuel supply line just forward of the “ T “ and install an inline fuel filter as shown.

Note: Fuel filter is not supplied



8. Gather the fuel filler dot parts as shown below.

Note: fuel filler dot is not supplied



9. Install the fuel filling dot as desired on the side of the fuse.

Do not allow the fuel dot to interfere with the leading edge of the wing.

Use a smaller size drill bit to drill the pilot hole for the fuel dot.



10. Then using from small to larger sized drill bits finish drilling the fuse side for the fuel dot.

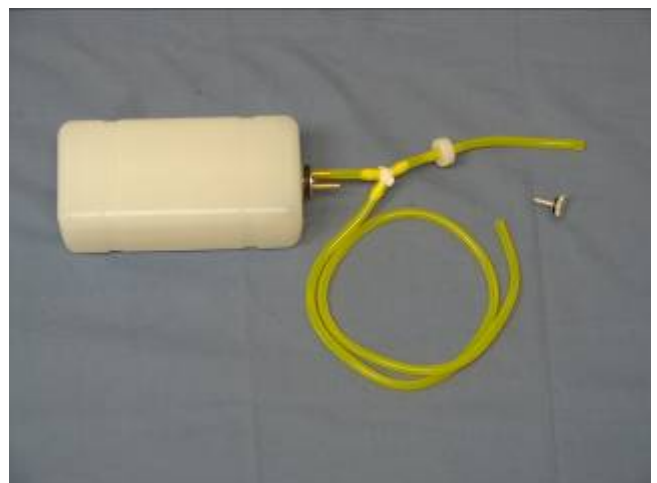
Note: Starting with a small drill bit then gradually going to a larger drill bit size will prevent the fuse side from splitting.



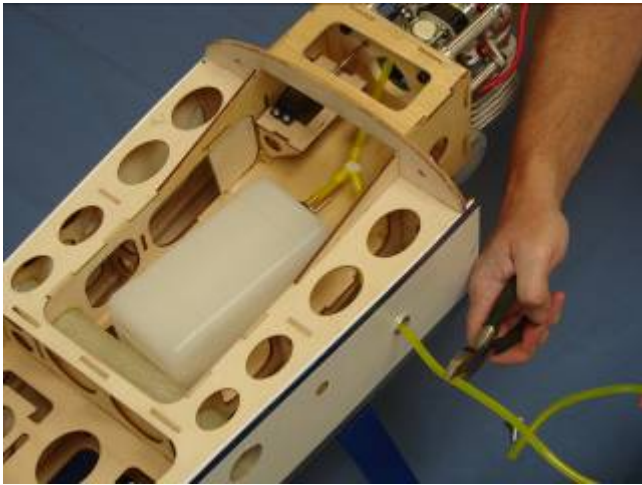
11. Install the fuel filler dot as shown. Place the nylon washers on the outside and inside of the fuse and secure with nut inside the fuse as shown.



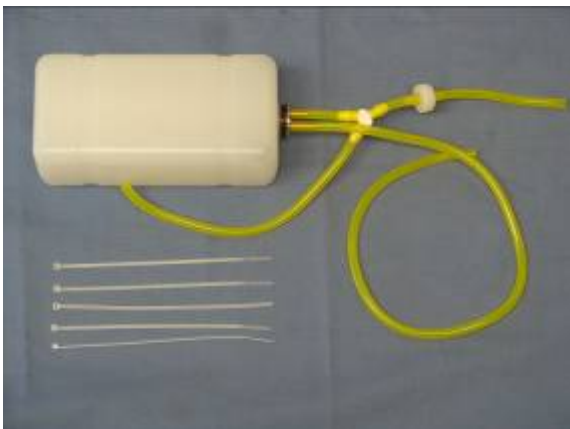
12. Install the remaining fuel line on the remaining nipple of the fuel “T” as shown.



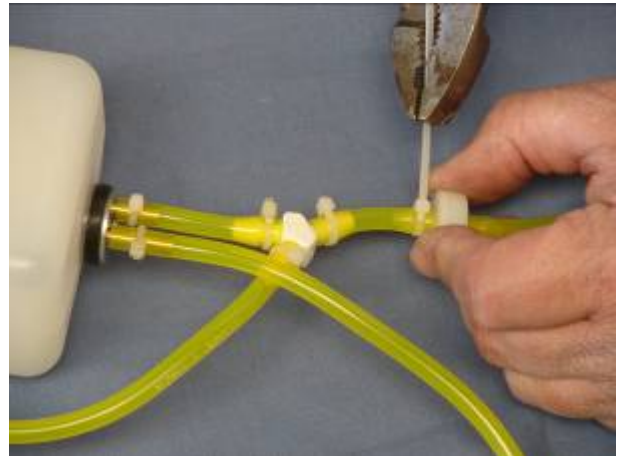
13. Place the fuel tank inside the fuse and run the fill line through the fuel dot installed on the fuse side as shown. Cut the line 2-3" outside the fuse side to allow it to pull out for filling.



14. Remove the tank from the fuse. Install the remaining fuel line to the vent tube on the tank as shown. Locate the small nylon ties as shown.



15. Secure all fuel line joints with the small nylon ties as shown. Trim away excess nylon ties.



16. The final tank assembly prior to installation into the fuse.



Fuel Tank Installation

1. Install two long nylon ties under the fuel tank mounting floor as shown.



2. Place the foam rubber pad on the fuel tank mounting floor as shown



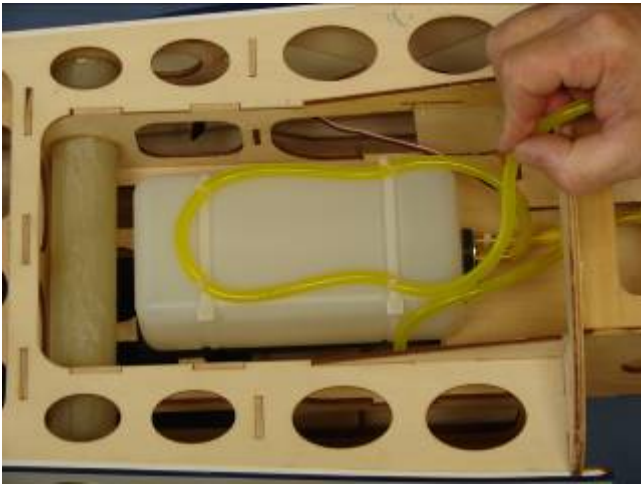
3. Install the tank. Run the feed line to the engine and the fill line out of the fuel filler dot as shown. Secure the tank with the two long nylon ties as shown. Trim away excess nylon tie as shown.



4. Install the fuel dot plug in the fill line and insert into the fuel dot in the fuse side as shown.



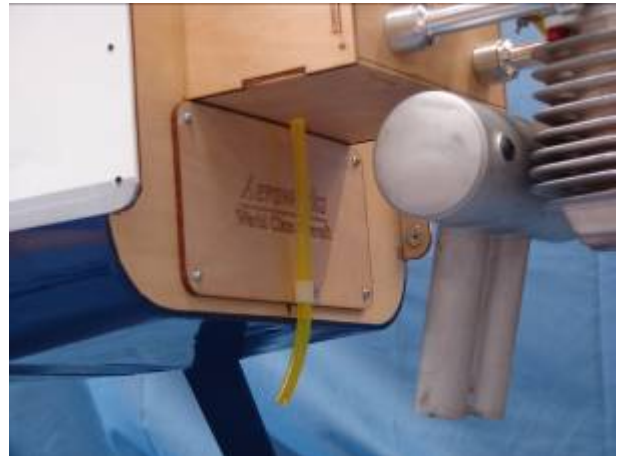
5. Route the vent line on top of the fuel tank and secure with small nylon ties as shown. This will stop excess fuel from draining out the vent line during an extended down line or when lifting the tail.



6. Drill a 1/4" hole in the bottom of the engine box to allow the vent line to exit through the bottom of the engine box as shown.



7. Secure the vent line to the bottom of the front former as shown.

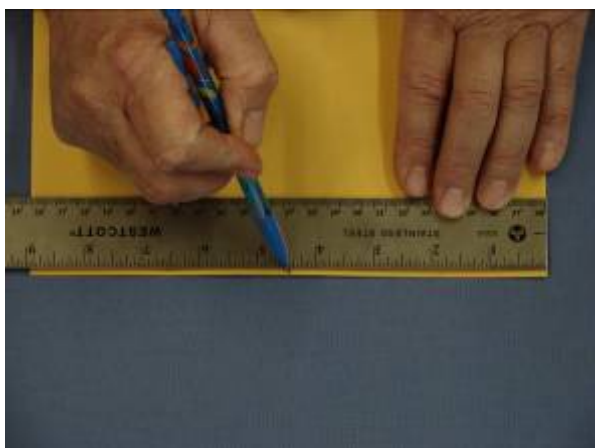


COWL INSTALLATION

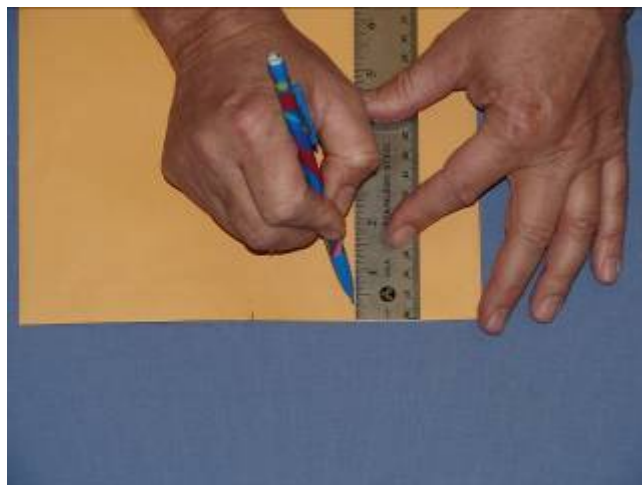
1. Gather the following material for making a cowl cutout template. Use a large envelope or cardboard file folder for template material.



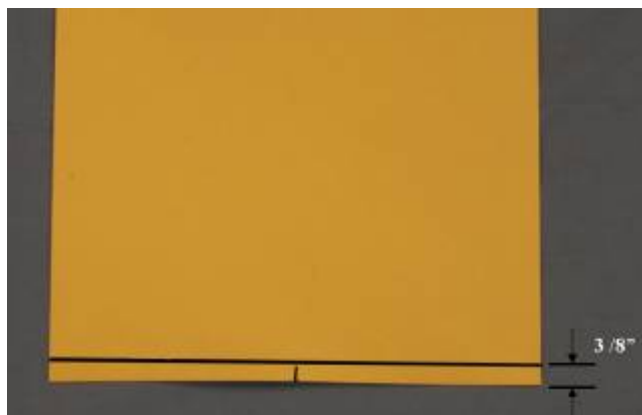
2. Measure and mark the center of the template as shown.



3. Measure 3/8" from the edge of the template as shown.



4. Draw a line 3/8" from the edge of the template as shown. This will allow for the overhang of the cowl behind the front former.



5. Mark the fuse centerline on the bottom of the front former as shown.



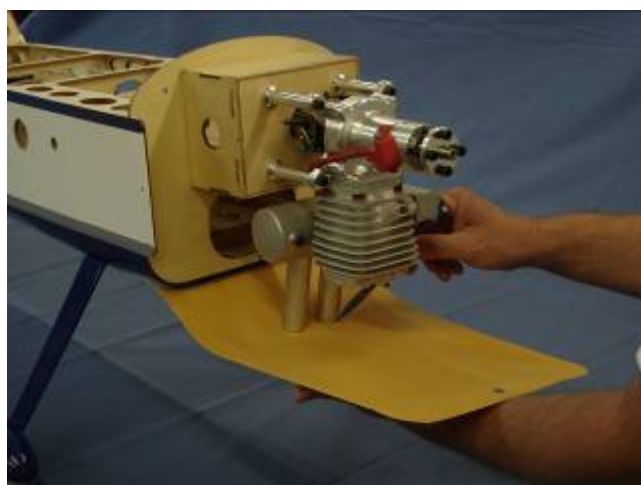
6. Tape the template to the bottom of the fuse 3/8" back from the front former and on centerline as shown.



7. Ensure there is a 3/8" overlap behind the front former as shown.

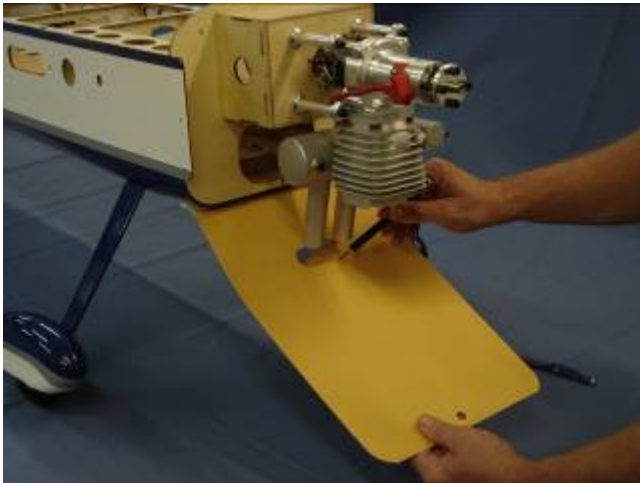


8. Hold the template up to the exhaust stacks and trace around the location of both of the exhaust stacks as shown.



9. Use a hobby knife to cut out the tracing around both of the exhaust stacks as shown,

Note: This hole is only for allowing the template to pull up to the cylinder head and will be enlarged later for a cooling air exit.



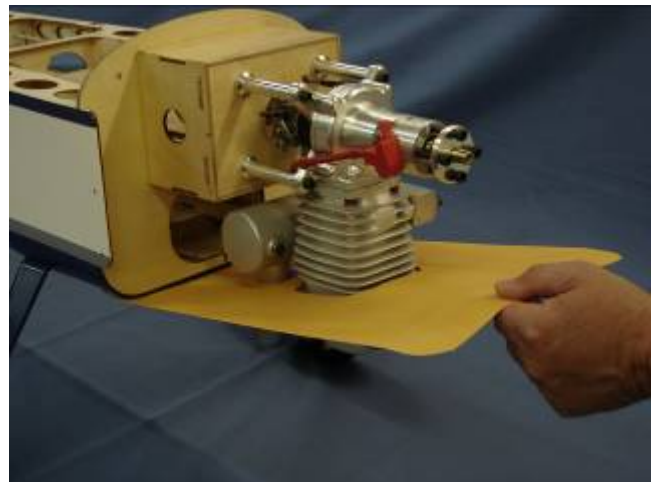
10. Pull up the template to the engine cylinder head. Trace around the engine cylinder so that they can extend below the template after the tracing is cut out.



11. Use a hobby knife to cut out the cylinder head opening as shown.



12. Pull up the template and ensure the cutouts will clear the exhaust stacks and cylinder head as shown. Trim as necessary to achieve approximately 1/8" to 1/4" clearance around the cylinder head. Remove the template from fus.



13. Mark a centerline onto the bottom of the cowl as shown.



14. Align the paper template with the cowl as shown. Ensure the center lines are aligned and the 3/8" overlap line is on the aft edge of the cowl.



15. Tape the template to the cowl as shown.



16. Draw a larger cooling air exit hole on the paper template that is aligned with the leading edge of the exhaust stacks. Ensure all the holes will have approximately 2-3 times the area as the intake holes on the front of the cowl



17. Use a hobby knife to cut out the cooling air exit in the paper template as shown.



18. Cylinder head and cooling air exit cutouts completed in paper template.



19. Use a felt tip marker to transfer the template cutout patterns to the cowl as shown. Ensure all the holes will have approximately 2-3 times the area as the intake holes on the front of the cowl



20. Use a rotary tool disc cutting wheel to rough cut the holes in the bottom of the cowl.



21. Use a rotary tool drum sander to finish cut and round out the corners from the rough cut.



22. Final cuts should look similar to this in the bottom of the cowl.

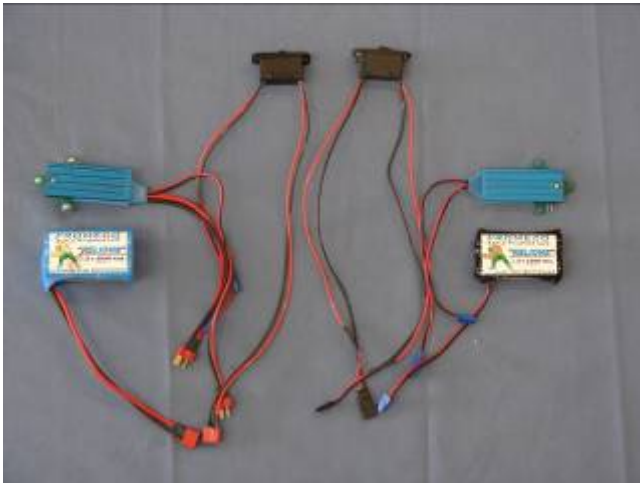


23. Trial fit the cowl to the fuse and trim sand as necessary to achieve approximately 1/8" to 1/4" clearance from all engine parts. Ensure all the holes will have approximately 2-3 times the area as the intake holes on the front of the cowl



RADIO INSTALLATION

1. Gather the switches and mounting hardware to be used. We used two switches, one for receiver battery, and one for ignition battery, and regulators for lithium ion batteries. The installation steps are similar for all types of switches.

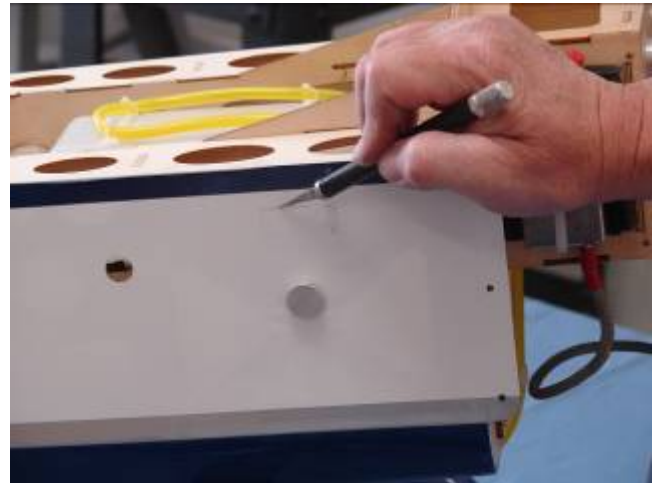


2. Switch location is at the discretion of the builder. We chose to place the switches toward the front of the fuse on each side. Mark location for switches using switch back mounting plate as a template.

Note: Make sure switch does not interfere with leading edge of wing.



3. Use a modeling knife to cut out the switch holes.



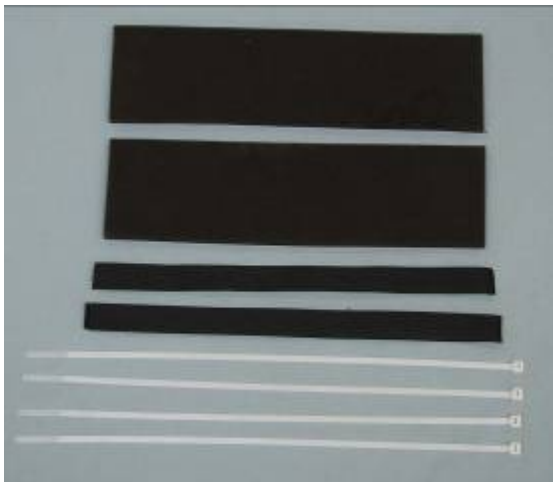
4. Slide switch wires inside fuse through the switch cutout.



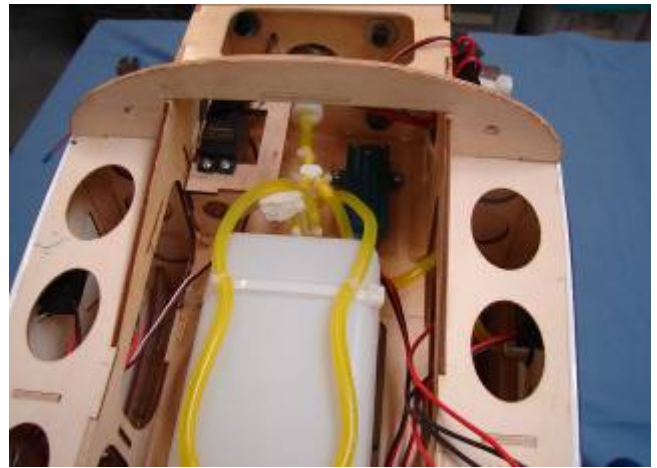
5. Mount switches in accordance with the switch instructions and hardware.



6. Gather the radio mounting hardware as shown below. Foam rubber, Velcro straps, and nylon ties.



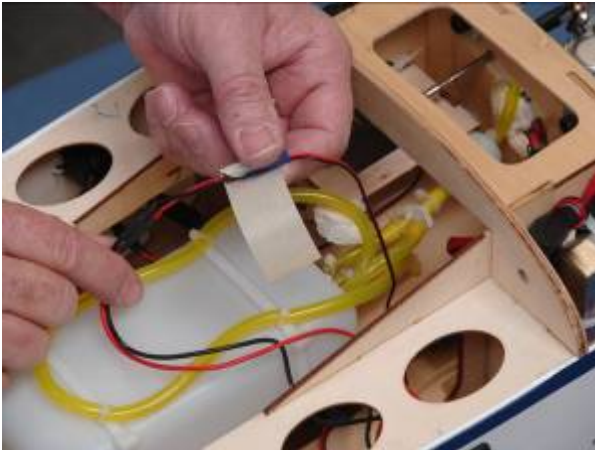
7. Mount the radio components as desired using the radio tray cutouts. Ensure all wires and plugs are secure and not subject to chafing when routed through the radio tray and formers.



8. Typical installation of ignition batteries on side of engine box using foam rubber base and nylon ties.



9. Ensure all radio plugs are secured with tape and will not come loose under light tension and vibration.

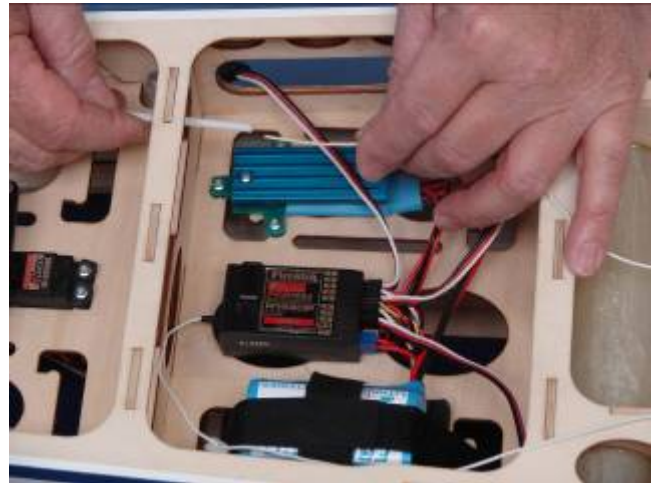


10. Typical installation of receiver battery and regulator in fuse using Velcro and foam rubber for battery and screws for the regulator.



11. Slide the receiver antenna wire into the antenna tube in the fuse as shown.

Note: Using talcum powder will help to slide antenna through tubing.



12. Secure the antenna wire to the tube with tape to prevent it from sliding back out from engine vibration as shown.



13. Secure the receiver to the radio tray with foam rubber base and nylon tie as shown.



14. Typical RC installation viewed from top.



15. Typical ignition installation viewed from the top.

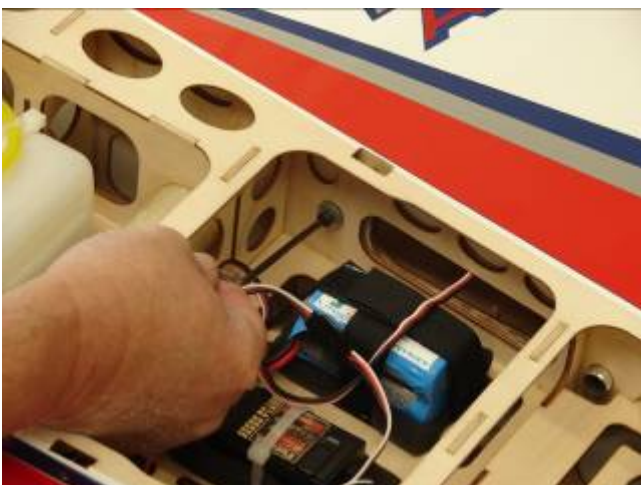


PRE-FLIGHT PREPARATION

1. Gather (2) 8-32 wing mounting bolts, (2) #8 rubber backed washers and (4) hairpins for preparation of mounting the wings.



2. Slide the wing tube in the fuse wing tube sleeve. Slide the wings on the wing tube and plug in the aileron servo plugs. Slide the rubber backed washers on the wing mounting bolts and insert bolts through the fuse side and into the wing root blind nuts. Tighten snugly but do not over tighten and crack the fuse or wing root wood.



3. Install hairpins into both front and rear aluminum anti-rotation wing dowels for a second method of wing attachment.



4. Gather (4) 4-40 stab mounting bolts and (4) #6 small rubber backed washers.



5. Slide the stab tubes in the fuse stab tube sleeves. Slide the stabs on the stab tubes and plug in the elevator servo plugs. Slide the rubber backed washers on the stab mounting bolts and insert bolts through the stab mounting tabs and into the fuse blind nuts. Tighten snugly but do not over tighten and crack the stab mounting tabs or the fuse sides.



6. Gather (6) 4-40 cowl mounting bolts and (6) #6 small rubber backed washers.

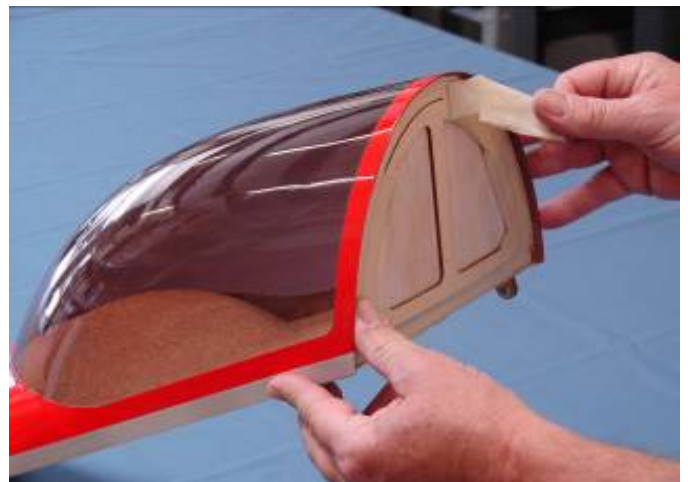
Note: Shown below are only (4) mounting bolts and washers. You will use (6) mounting bolts and washers for securing the cowl.



7. Mount the cowl using the cowl mounting bolts and rubber backed washers. The rubber backed washers are to prevent the fiberglass cowl from cracking and to prevent mounting bolts from loosening from normal engine vibration.



8. Remove the tape holding in the canopy bulk-head hatch.



9. Remove the canopy bulkhead hatch as shown. If desired an optional instrument panel and pilot may be installed.

Note: Instrument panel and pilot are not supplied in the kit but may be purchased separately from Aeroworks.



10. Reinstall the canopy frame hatch and glue in place as shown. Use care not to get glue on the clear plastic canopy.

Note: Epoxy or thick CA glues are recommended.



11. Gather the (4) 4-40 hatch mounting bolts and (4) #6 small rubber backed washers.

Note: It is highly recommended you apply thin CA glue to the front hold down dowels. This is a High vibration area and can loosen the front dowels.

Always check the front dowels are secure before each flying session



Use thin CA to secure front hatch hold down dowels



12. Slide the rubber backed washers on the hatch mounting bolts and insert bolts through the hatch mounting holes and into the fuse blind nuts. Tighten snugly but do not over tighten and crush the hatch or the fuse sides.



FINISHING DECAL INSTALLATION

Decal installation

1. Decals supplied with the kit may vary from the photos below.

Gather supplied decals, transfer tape, ruler, scissors, hobby knife, plastic squeegee or credit card, Windex or Application fluid like **Rapid Tac**. Also, a solution of 1 drop of dish detergent to a cup of water sprayed on the model will assist in proper positioning.

Note: clean surface and tighten all covering before any decals are applied.



2. Factory placement of decals shown.



3. Factory placement of decals shown.



4. Factory placement of decals shown.



5. Cut transfer tape to accommodate decal size.

Note: Transfer tape will be reused. DO NOT throw away any transfer tape until decal placement is complete.



6. Remove backing from Clear transfer tape.



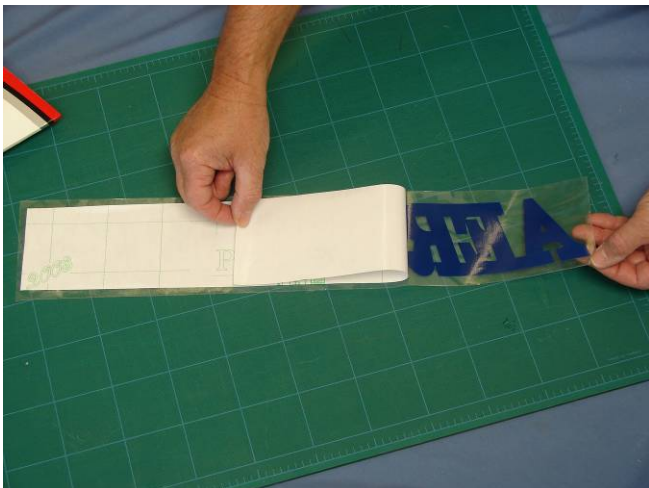
7. Apply clear transfer tape over top of decal.



8. Press transfer tape to top of decal.



9. Peel backing from decal.



10. Spray model surface with application fluid, Windex or soapy water solution.



11. Spray back side of decal with application fluid, Windex or soapy water solution.



12. Position decal in proper location. Application fluid will allow decal to be moved slightly.



13. Using a plastic squeegee or credit card. Spread decal smooth and remove all excess application fluid. Let decal set until dry enough to be able to remove transfer tape with out removing decal. Do not leave until completely dry or transfer tape will be difficult to remove.



14. Pull transfer tape from top of decal. Take care not to pull away or damage decal.



15. Let decal dry before applying top decal.



16. Repeat installation process of bottom decal for top decal installation. Use application fluid for easier installation



17. Place top decal over bottom decal. Position evenly and centered on bottom decal. Press top decal onto bottom decal and squeegee out excess application fluid. Let decal dry until transfer tape can be lifted without removing decal.



18. Pull transfer tape from top of decal. Take care not to pull away or damage decal.



19. Finished decal installation. Work slowly and carefully and you will be rewarded with a beautifully finished model.



CENTER OF GRAVITY - CONTROL THROWS

Center of Gravity

3" Back from wing L.E. at wing tip

1. **Warning, do not skip this step!**

The recommended CG is **3"** back from the wing leading edge at the wing tip as shown.



2. Balance the 50cc EXTRA 260 ARF-QB without fuel in the tank with the batteries installed and ready to fly. The engine, radio, servos, and battery you use will determine the final weight and locations of equipment. Try to balance the model by moving the battery and receiver before adding any ballast.



3. Start at recommended CG until you are comfortable with the flight characteristics of the aircraft. You may find this a bit nose heavy at first but that is fine to start with. After you are comfortable adjust the CG to suit your flying style in small steps, especially when shifting the CG toward the tail. Move the battery or add small stick on weights to the nose or tail as necessary.
4. For aerobatic flying a more aft balance point is better. For smooth sport flying a more forward CG is better. An aircraft that is too nose heavy does not fly well and is difficult to land. A tail heavy aircraft is uncontrollable and will likely crash.

Control Throws

1. The amount of control throw should be adjusted using mechanical means as much as possible and then electronically with the radio. The control throws are shown in degrees and inches of deflection measured at the widest point of the control surface for both low and high rates.
2. Use the widest part of the aileron as shown to measure the aileron throw in inches.

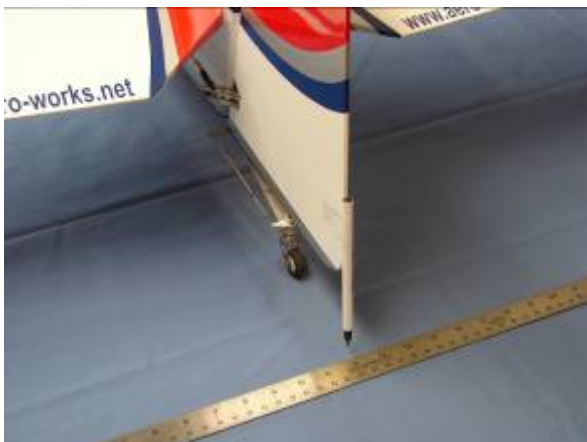


3. Use the widest part of the elevator as shown to measure the elevator throw in inches.



4. Rudder throw measured in inches.

Hint: Taping a pencil or pen to the trailing edge of the rudder will help you to see the correct amount of rudder travel



5. Use the **supplied** flight control deflection meter to measure the throws in degrees. Prop up the tail of the aircraft until the fuselage is parallel to the table top.



6. Use the widest part of the elevator to measure the elevator throw in degrees..

7. Location for throw meter to measure Aileron throw in degrees.



Control Throw Deflection Table

	<u>Low Rate</u>	<u>High Rate</u>
Aileron	2 1/2" or 25° up 2 1/2" or 25° down	3" or 30° up 3" or 30° down
Rudder	2 1/2" or 35° left 2 1/2" or 35° right	3 1/2" or 40° left 3 1/2" or 40° right
Elevator	1 3/8" or 12° up 1 5/8" or 16° down	2" or 18° up 2 1/4" or 24° down

For 3D flying use the following throws:

	<u>3D Rate</u>
Aileron	3 1/2" or 35° up 3 1/2" or 35° down
Rudder	6" or 45° left 6" or 45° right
Elevator	4 1/2" or 45° up 4 1/2" or 45° down

We recommend 15% Expo on low rates, 30% expo on high rates, and 60% expo on 3D rates as a starting point. You can adjust from there to suit your own flying style.

Preflight Checks

Center of Gravity: Check CG is set properly.

Engine: The engine should run smoothly at all throttle settings with smooth transition from idle to full throttle without stalling or hesitation. Do not fly an unreliable engine. Read engine instructions including break in and tuning completely.

Prop balancing: Ensure prop is properly balanced prior to mounting on engine.

Flight Controls: Ensure all flight controls are free from binding and are centered. Check that all hinges are tight and will not pull out. Control linkages must be rigid and tight and have no slop. Confirm proper direction of ailerons, rudder, and elevator. Experienced flyers have lost airplanes due to reversed ailerons. Right roll is right up, left down. Left roll is left up, right down.

Batteries: Transmitter, ignition and receiver batteries are fully charged.

Fasteners: Check all engine bolts, wing bolts, hatch bolts, servo screws, control horn bolts, wheel collars, and clevis keepers are tight and secure.

Covering: Check all covering and seams are sealed and secure.

Radio: Check trims set to neutral and controls centered. Check rate and condition switches set properly. Check the receiver antenna is fully extended and not reversed on it self.

Range check: Do a range check with and without the engine running in accordance with the radio manufacturer instructions. If there is insufficient range or a large reduction with the engine running, do not fly until it is resolved!

Fuel: Fill the fuel tank before each flight.

Aerobatics

The 50cc EXTRA 260 ARF-QB is capable of any aerobatic maneuver. After you gain some confidence and little experience flying the airplane you can cut loose and perform any maneuver you can think of. Here is a list of some of the more popular aerobatic and 3D maneuvers you can try:

- Loops and rolls
- Knife edge flight
- Stall turns
- Snap rolls
- 2, 4, and 8 point rolls
- Slow rolls
- Spins upright and inverted
- Flat Spins upright and inverted
- Harriers upright and inverted
- Water falls
- Torque Rolls
- Rolling circles

The sky and your imagination are your only limits.

FLY and ENJOY!

AEROWORKS

[illegible]